

## **SUMMER PLACEMENT**

In

**MAX SUPER SPECIALITY HOSPITAL, SAKET, NEW DELHI**

**(April 3<sup>rd</sup> to June 2<sup>nd</sup>, 2015)**

### **REPORTS ON:**

1. Operational Efficiency Model for streamlining the pre-renal transplant work up considering patient satisfaction level.
2. Marketing Strategic Model of Revenue Escalation for Medical Tourism.
3. The Supply Chain and Distribution Management Study of Central Pharmacy.
4. Brain Death Declaration and its Medico legal Aspects (Review Study).
5. Enabling technologies for achieving best practices in CSSD.
6. Bill Till Date (BTD) - Process (Descriptive Study).

By

**Diwanshu Sharma**

**MBA Hospital and Health Management**

**2014-2016**



Institute of Health Management Research, Jaipur

**CERTIFICATE**

This is to certify that Diwanshu Sharma has undergone his Summer Training in Max Super Speciality Hospital, Saket, New Delhi from 3<sup>rd</sup> April, 2015 to 2<sup>nd</sup> June, 2015. The candidate himself carried out all the studies related to his Summer Training. His approach to the study has been scientific and analytical.

The Summer Training is partial fulfilment of the course requirement recommended for the award of Master of Business Administration in Hospital and Health Management Degree.

I wish him success in all his future endeavours.



Col. (Dr.) Ashok Kaushik

Professor, Dean (Academics and Student Affairs)

IIHMR University,

Jaipur

## SUMMER TRAINING CERTIFICATE:

This is to certify that Diwanshu Sharma, student of IIHMR University, Jaipur, Batch- 19<sup>th</sup>, has successfully completed his Summer Training of 2 months from 2<sup>nd</sup> April 2015 to 3<sup>rd</sup> June 2015.

He has done the following projects under the guidance of Dr. Gaurav Sharma in various departments of MAX Super Speciality Hospital, Saket, New Delhi :-

1. Operational Efficiency Model for Streamlining The Pre Renal Transplant Workup via Patient Satisfaction Level Findings.
2. Marketing Strategic Model of Revenue Escalation for Medical Tourism.
3. Enabling technologies for achieving best practices in CSSD.
4. The Supply Chain and Distribution study of Central Pharmacy.
5. Brain Death Declaration and its Medico legal Challenges.
6. Bill till Date – Process.

The project on evaluation fulfils all the stated criteria and the student's findings are his original work.

I hereby certify his work as excellent/good/satisfactory to the best of my knowledge.



Dr. Gaurav Sharma

Deputy Medical Superintendent,

MSSH, Saket, New Delhi

Date: 2<sup>nd</sup> June; 15

**Dr. Gaurav Sharma**  
Deputy Medical Superintendent  
Max Super Speciality Hospital  
1, Press Enclave Road, Saket  
New Delhi - 110017

## CERTIFICATE OF COMPLETION

This is to certify that

*Diwanshu Sharma*

has been associated as an

**INTERN**

with the department of

HOSPITAL ADMINISTRATION

for a period of

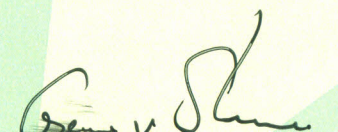
3rd April 2015 to 2nd June 2015

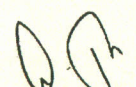
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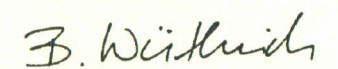
**Max Super Specialty Hospital,**

**Saket, New Delhi**

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

  
Head of the Department

  
Dr. Shubnum Singh  
Dean - Nursing, Allied Health, & Wellness Programs  
Max Healthcare, New Delhi

  
Ms. Brigitte Wuethrich  
General Manager  
Max Institute of Medical Excellence  
Max Healthcare

## ACKNOWLEDGEMENT:

Summer Training is successful largely due to the effort of a number of dextrous people who have always given their valuable advices or lent a helping hand. I sincerely appreciate the inspiration; support and guidance of all those people who have been instrumental in making this summer training a success.

I, **Diwanshu Sharma**, the student of **IIHMR University, Jaipur**, consider it as privilege and honour to work as a summer trainee at **Max Super Speciality Hospital, Saket, New Delhi** for 2 months.

At this juncture, I feel deeply honoured in expressing my sincere thanks and gratitude to my **Mentor, Dr. Gaurav Sharma, Deputy Medical Superintendent, MSSH, Saket, New Delhi** for the confidence bestowed in me and for making resources available at right time and providing valuable insights leading to successful completion of my projects during summer training.

I also wish to extend a special thanks to **Chambesh Kumar, Deputy Head, Finance (IP Billing)**, for their aspiring guidance, invaluable constructive criticism and friendly advices during the training period.

I am sincerely grateful to **Kirti Dahiya, Deputy Head Marketing**, for sharing their truthful and illuminating views on a number of issues related to the project.

I am obliged to all the staff members of **Institute of Renal Sciences, MSSH, Saket, New Delhi** for the valuable information provided by them in their respective fields. I am grateful for their co-operation during the course of my training period.

I express my heartfelt appreciation to **IIHMR University** for arranging the summer training and owe my profound gratitude to my **College Mentor Col. (Dr.) Ashok Kaushik, Dean (Academics), IIHMR University, Jaipur**, who helped me throughout for solving various doubts and queries.

A million thanks to all the **employees of MSSH**, without whose cooperation the training would not have been successful. At the end, I would like to thank my family and friends for being a constant source of inspiration to me.

Diwanshu Sharma

## **ABBREVIATIONS:**

| <b>Sr. No</b> | <b>Abbreviation</b> | <b>Meaning</b>                                                      |
|---------------|---------------------|---------------------------------------------------------------------|
| 1.            | BBV                 | Blood Borne Viruses                                                 |
| 2.            | CAPD                | Continuous Ambulatory Peritoneal Dialysis                           |
| 3.            | CDC                 | Centres for Disease Control and Prevention                          |
| 4.            | CKD                 | Chronic Kidney Disease                                              |
| 5.            | CPRS                | Computerised Patient Record System                                  |
| 6.            | CSSD                | Central Sterile Supply Department                                   |
| 7.            | ESRD                | End Stage Renal Disease                                             |
| 8.            | HD                  | Haemodialysis                                                       |
| 9.            | HDF                 | Haemodiafiltration                                                  |
| 10.           | HIA                 | Hospital Acquired Infections                                        |
| 11.           | HIS                 | Hospital Information System                                         |
| 12.           | ICU                 | Intensive Care Unit                                                 |
| 13.           | IP                  | In Patient                                                          |
| 14.           | IPS                 | International Patient Services                                      |
| 15.           | JCI                 | Joint Commission International                                      |
| 16.           | KTP                 | Kidney Transplant Patient                                           |
| 17.           | MSSH                | Max Super Speciality Hospital                                       |
| 18.           | NABH                | National Accreditation Board for Hospitals and Healthcare Providers |
| 19.           | OPD                 | Out Patient Department                                              |

|     |      |                                  |
|-----|------|----------------------------------|
| 20. | PD   | Peritoneal Dialysis              |
| 21. | PPE  | Personal Protective Equipment    |
| 22. | THOA | Transplant of Human Organs Act   |
| 23. | VAE  | Ventilator Associated Events     |
| 24. | VAP  | Ventilator Associated Pneumonia  |
| 25. | VRE  | Vancomycin Resistant Enterococci |

## Table of Contents –

| S. No. | Topic                                                                                                                              | Page No.          |
|--------|------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1.     | Abbreviations                                                                                                                      | 3                 |
| 2.     | Observational Learning<br>a)Introduction<br>b)Mode of Data Collection<br>c)General Findings                                        | 6<br>6<br>9<br>19 |
| 3.     | Projects                                                                                                                           | 40-134            |
| 4.     | Project 1 – Operational Efficiency Model for streamlining the pre-renal transplant work up considering patient satisfaction level. | 40-74             |
| 5.     | Project 2 - Marketing Strategic Model of Revenue Escalation for Medical Tourism                                                    | 75-95             |
| 6.     | Project 3 - Enabling technologies for achieving best practices in CSSD.                                                            | 96-105            |
| 7.     | Project 4 – The Supply Chain and Distribution Management Study of Central Pharmacy.                                                | 106-115           |
| 8.     | Project 5 - Brain Death Declaration and its Medico legal Aspects (Review Study).                                                   | 116-130           |
| 9.     | Project 6 - Bill Till Date (BTD) - Process (Descriptive Study).                                                                    | 131-134           |
|        |                                                                                                                                    |                   |

## OBSERVATIONAL HOSPITAL LEARNINGS:

### SUMMER TRAINING:

Summer Training is an intrinsic part of MBA HM course and is done after the completion of 1<sup>st</sup> year for duration of 2 months. During this period, the student is expected to use the things he/she has learned in the organisation and put them into practice. This way the student gains work experience in their field of study. The gained experience will be helpful to finish the final year of study.

### SUMMER INTERNSHIP (Dissertation internship):

Summer Internship is mostly done by students who are in their final year. With this kind of internship a student does research for a particular organisation. The company can have something that they feel like they need to improve, or the student can choose a topic within the company themselves. The results of the research study will be put in a report and often will have to be presented.

### PURPOSE OF SUMMER TRAINING:

1. Provides an opportunity for hospital exposure at ground situations.
2. Helps in identifying the issues and problems for a manager to resolve, based on the knowledge and competency.

## INTRODUCTION:

### HOSPITAL PROFILE:



**Max Healthcare Institute** is a healthcare institute based in New Delhi. The Institute is a wholly owned subsidiary company of Max India Limited. Established in 1985, Max India

Limited is a Public Limited company listed in the BSE and NSE with more than 37,000 shareholders.

The institute operates eleven centres in Delhi, NCR and neighbouring Punjab region, providing health care services in more than 30 disciplines.

Max Healthcare commenced operations in 2001 with the intention to provide comprehensive and world-class healthcare services in India.

**Performance, Trust and Service excellence** are enshrined in Max India Group's Vision, Mission and Values. In addition to these 'life-centred' businesses, Max India manufactures speciality products for the packaging industry through its division- **Max Speciality Products (MSP)**. MSP too has a strong service excellence orientation that strives on building long lasting partnerships.

Max's focus is "completely satisfying customer needs profitably" by using DMAIC and Lean methodology.



## OBJECTIVES:



## The Logo Story:



The **cross** is the accepted symbol for Healthcare the world over. It is a truly fitting symbol for a group that endeavours to enhance the quality of life through healing and care. Green signifies closeness to nature and symbol of life.

With over **1900 beds** and **11 top hospitals** in Delhi-NCR, Punjab and Uttarakhand, **2100 world-class doctors** and **9300 support staff**, Max Healthcare is one of the leading chains of hospitals in India. With **525 ICU beds** & the most advanced technology, our state-of-the-art infrastructure is rated the best in North India thereby making Max Healthcare one of the best hospitals in India.

## RECENT CHANGES:

Max India, the flagship company of New Delhi-based serial entrepreneur Anajit Singh, on January 2015 approved a three way demerger of its insurance, healthcare and specialty films with holding companies being created for each of them.

The existing company **Max India** will be renamed **Max Financial Services** and the other two businesses will be listed post the demerger, while newly created Max India will manage the investments in health & allied business.

**Max Ventures and industries** will manage the investment activity in the group's manufacturing arm.

## MAX SUPER SPECIALITY HOSPITAL, SAKET, NEW DELHI:

Located in the heart of South Delhi, Max Super Speciality Hospital, Saket (a unit of Devki Devi Foundation), is one of the premier names in health care domain in the world. **Quality, medical & service excellence and detailing are the pillars of this institution.**

Designed by internationally renowned architect Mr. Richard Wood and constructed in accordance with globally-accepted standards for hospitals, quality is our top priority. A **550-bedded** healthcare facility, we are approximately 15km from New Delhi Railway Station and 12km from the Domestic Airport. The Hospital is divided into **two wings**, one is **East Wing** and another is **West Wing**.

### AWARDS AND ACCREDITATIONS:

#### 1. Certification of GREEN OT:

Bureau Veritas (BV), a European Standards organisation awarded the Green OT certification to Max Healthcare. Max Super Speciality Hospital Saket is the first hospital ever in the country to receive this prestigious accolade. The certificate recognizes its adherence to the highest quality and safety parameters for patients and healthcare workers in the highest infection-prone zone in a hospital, i.e., operation theatres.

#### 2. NABL

#### 3. NABH

#### 4. NABH Accreditation for Blood Bank

#### 5. FICCI Healthcare and Excellence Awards

#### 6. D L Shah Award on “Economics of Quality”

#### 7. ISO 90001:2000 and ISO 14001:2004

Max Super Speciality Hospital, Saket, is multi-speciality NABH and ISO accredited hospital, owned and operated by Max Healthcare Institute Limited (MHIL).

### MODE OF DATA COLLECTION:

- Appointments with the HODs were set by the mentor and a circular was issued to all the HODs.
- Data collection involves discussion with the HODs on the managerial issues and talking to the other staff members and following the records.

### Sources of Data:

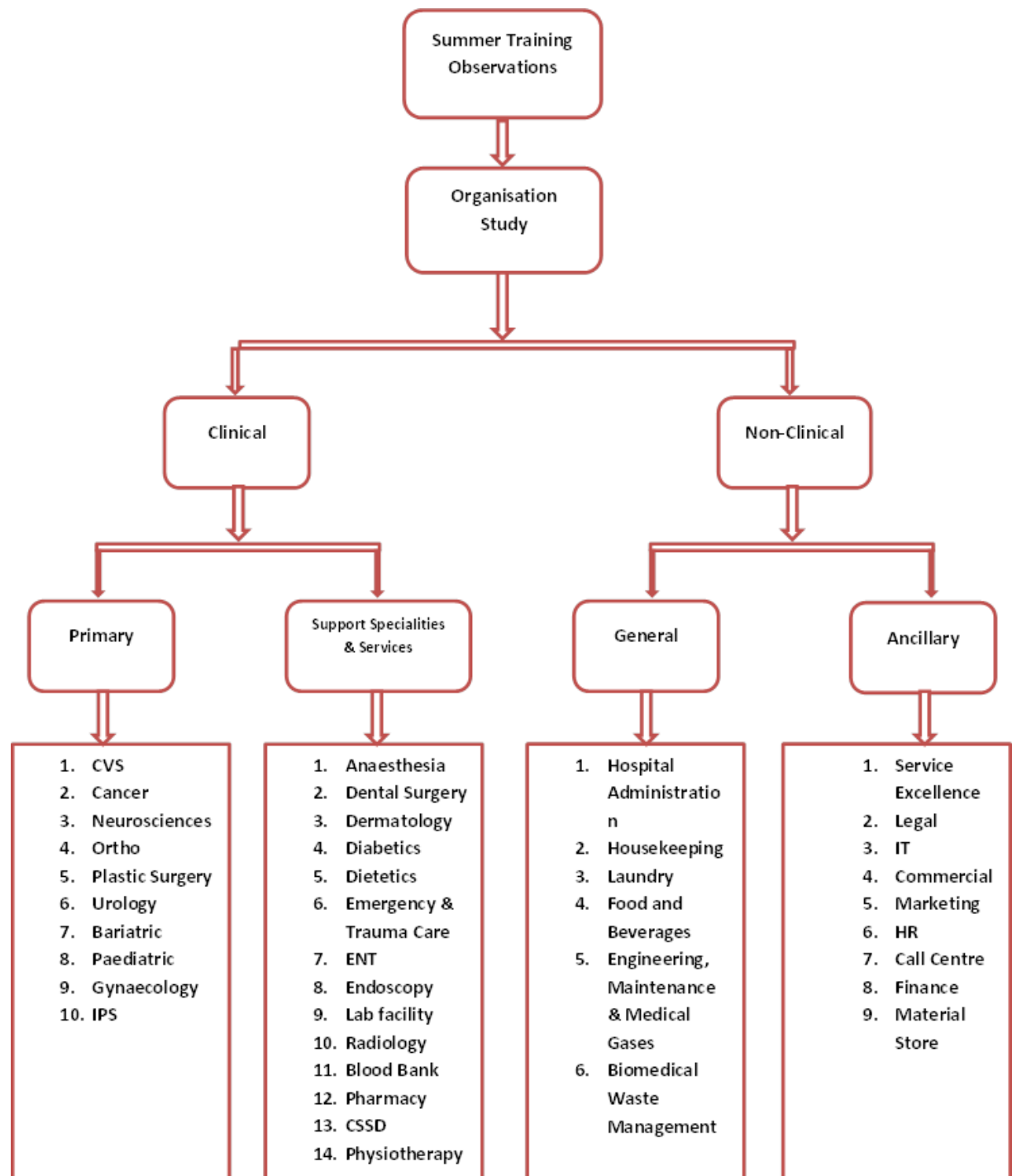
**Primary data collection** via direct observations, interviews, recordings:

- By interacting with the HODs, managers and other staff members.
- By interacting and observing the patients' and their attendants.
- By direct observations

### Secondary Data:

- Through registered records
- Through website of the hospital
- Literature available related to hospitals like magazines, pamphlets, CDs, brochures, written documents.

The various departments of the MSSH, Saket is divided as follows –



## Recently Max has implemented INSTITUTE wise formation of different specialities.

Max Super Speciality Hospital, Saket provide the highest level of professional expertise and world class healthcare in all the major disciplines of

1. Cardiology
2. Oncology
3. Orthopaedics & Joints Replacement Surgeries
4. Paediatric Cardiology & Oncology
5. Neurosciences
6. Obstetrics & Gynaecology including IVF
7. Aesthetic & Reconstructive Surgery
8. Minimal Access, Metabolic & Bariatric Surgery
9. Urology & Renal Transplants
10. ENT

### 1. Max Heart and Vascular Institute:

Max Heart and Vascular Institute is a tertiary care centre designed to provide the highest level of professional expertise and patient care in India and its neighbouring countries. The Institute is equipped with cutting edge technology, digital flat panel Cath Lab, State of art OTs, apex tertiary level coronary services provided by onsite medical consultant to handle acute MI, preventive care services, advanced diagnostic services including 64 slice 'Phillips Brilliance' CT scanner and comprehensive nuclear medicine facilities.

#### Services offered at Max Heart and Vascular Institute –

- Heart Check-up Packages
- Non Invasive Cardiology and Diagnostics
- Invasive and Non Invasive Interventional Cardiology
- Electrophysiology, Pacemaker, and Arrhythmias Services
- Cardiac Surgery
- Paediatric Cardiology and Paediatric Cardiac Surgery
- Vascular Intervention and Surgery

#### 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 include:

- Angiography
- Electrophysiology study (EPS)
- Cath study

Out of these, angiography and Cath study are done in Cath lab 1 and EPS is done in Cath lab 2. Lab 1 is termed as Pro Labs and Lab 2 is termed as General Labs. There are 7 beds and approximately 20 procedures are performed per day.

**Other procedures:**

- Percutaneous Transluminal Coronary Angioplasty
- Peripheral Transluminal Angioplasty
- Radio Frequency Ablation
- Permanent pacemaker Implantation
- Intra Cardiac Defibrillation
- Closure of some congenital heart defect

**Units of Cath Lab:**

- Cath lab 1
- Cath lab 2
- Technical room
- Observation room
- Technician room
- Store room and utility room
- Washing station

**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
- Appointment scheduling
- Doctors schedule summary
- Patient billing (OP, IP)
- Insurance management
- Patient visit summary and records movement
- Preventive health program registration and scheduling

### **Steps in patient registration process:**

1. Patient meets the PCE/PCC and fills the registration form and gives detail if already registered.
2. Patients' details entered in HIS
3. Patient invoice generated with registration no and service details
4. Payment of the bills (if cancellation of procedure—refund provision)
5. New service tariff is generated and intimated o IT for incorporation into HIS.
6. Manual invoices are generated and updated with IT if system not working.

## **2. Max Cancer Centre:**

The Max Cancer Centre at MSSH, Saket provides holistic integrated Cancer care. Max Cancer Centre is the first facility in northern India to acquire Novalis Tx for IMRT/IGRT, Radiosurgery, SRS/SRT.

The Max Cancer Centre is the Combination of these **three sub categories-**

1. Surgical Oncology
2. Radiation Oncology
3. Medical Oncology

### **The services provided at Max Cancer Centre-**

- Diagnostic, Curative, Palliative and others for cancers affecting Head & Neck, Lung, GI, Breast, and Others
- Paediatric Oncology including Leukaemia, Brain Tumours, Lymphomas
- Haemato-Oncology
- Neo adjuvant and Adjuvant Chemotherapy
- Immunotherapy
- Palliative Chemotherapy
- Autologous and Allogeneic bone marrow transplant / Peripheral blood stem cell transplants
- Tumour Board

## **ONCOLOGY:**

Day Ward/ Day Care provides care for the people who need to receive treatment during day and do not require staying as in- patients. It provides chemotherapy (40-50 patients/day).

There are 9 beds and 8 recliners and 4 dummy beds. Before chemotherapy is commenced the patient is assessed to understand the planned consents and willing to undergo procedures. The department consists of the following rooms:

- CT Simulator room
- Treatment planning verification room
- .Mould and Cast room
- Rooms for director and physicist
- Committee room

### **3. Max Institute of Neurosciences:**

Max institute of Neurosciences is a super speciality tertiary care centre providing the highest level of professional expertise and leadership in all major disciplines of neurosciences.

#### **Services provided –**

- Advanced Brain Tumour Centre
- Minimally Invasive Spine Surgery Centre
- Stroke centre
- Special clinics for Epileptic, Neuromuscular and Movement Disorders

#### **Technologies used –**

- India's first Brain Suite – Most advanced Neuro Operation Theatre
- Zeiss Pentero Microscope
- Latest Flat Panel DSA
- Iso centric C arm

### **4. Max Institute of Orthopaedics and Joint Replacement Surgery:**

Max Institute of Orthopaedics and Joint Replacement Surgery is a state of art specialised healthcare facility which provides the highest levels of professional expertise and patient care with intent of early mobilization and minimal discomfort.

Recently the Max Healthcare has changed the Institute's name to **Max Institute of Musculoskeletal Sciences (MIMS)**.

#### **Services offered –**

- Computer assisted joint replacement surgery
- Total Knee Hip Replacement Surgery
- Foot and ankle surgery
- Hand, Shoulder and Elbow surgery
- Spine Surgery
- Sports Medicine

### **PHYSIOTHERAPY AND REHABILITATION CENTRE:**

- Walk in patients from OPD and referred patients after surgeries are sent to Physiotherapy Department to perform post-operative exercises.
- 380- 390 patients per day (Domestic + International)
- **Manpower:** 27
- **Shifts:** 3 shifts (8 hours)
- **Rehabilitation** includes Speech, Psychological, Nutritional, Physiotherapy treatments

## **5. Max Institute of Aesthetic & Reconstructive Surgery (Plastic Surgery):**

Aesthetic Surgery offers an endless array of options to hold improve one's appearance and function. Most aesthetic surgeries as we practice today have an in-built element of functional correction.

Here at MSSH, Saket, latest technologies like Laser, Ultra pulse Laser and Electro Sonic Liposuction.

### **List of Procedures –**

1. Eyelid Surgery( Blepharoplasty)
2. Brow lift / Forehead lift
3. Face lift (Rhytidectomy)
4. Facial Implants (Chin, Cheek, Jaw)
5. Lip Augmentation
6. Nose Shaping(Rhinoplasty)
7. Abdominoplasty (Tummy Tuck)
8. Hair Restoration Surgery
9. Injectable wrinkle fillers (Hyaluronic acid and Others)
10. Botulinum Toxin Injection (Botox)
11. Breast Lift (Mastopexy)

## **6. Max Institute of Urology & Renal Sciences:**

Max Institute of Urology & Renal Sciences provides highest level of care and support to the patients. The institute is fully equipped for all endoscopic and laparoscopic urological surgeries.

### **Services Include –**

- Uro-Oncology (Kidney, Bladder and Prostate Cancer)
- Endo-Urology (Endoscopic / Laser surgery of prostate, stones etc.)
- Reconstructive surgery
- Renal Transplantation –
- Laparoscopic Urological Surgery
- Andrology (Sexual Dysfunctions and Male Infertility)
- Endoscopic Surgery for prostate

## **7. Max Med Centre & Max Specialty Clinic (Eye Care & Dental Care):**

(Speciality OPDs and dedicated centre for Dental Care and eye care of one's preventive & primary healthcare requirement)

### **Services offered –**

- LASIK (Wave front and Standard LASIT)
- Eye Ultrasound
- Glaucoma Diagnostic & Surgery
- Cornea Diagnostic and Surgery
- Retina & Vitreous Diagnostic
- Lasers and Surgery
- Squint Surgery
- Plastic surgery of eye
- Cataract Surgery

### **Dental Care Services –**

- Common ailments encountered in Dental Care:
- Caries or Cavities
- Abscesses
- Gingivitis or Gum Diseases
- Bad Breath
- Loosing of tooth
- Leukoplakia or white patches
- Cancer of Mouth

### **Other Specialities –**

- ENT (Including Cochlear and BAHA Implants)
- Internal Medicine
- Pulmonology
- Dermatology
- Gastroenterology
- Rheumatology

ENT and Ophthalmology gas OPD counters at MSSH, Saket but the surgeries and minor procedures are performed at Max Shalimar Bagh, Delhi.

## **8. Max Institute of Minimal Access, Metabolic & Bariatric Surgery:**

The Department of Minimal Access Surgery at MSSH, Saket endeavours to provide the best healthcare and rehabilitation services.

This institute is a first of its kind in the subcontinent and an international centre of excellence. It is dedicated to performing surgeries using minimal access utilization techniques like Key Hole Surgery and Spider Surgery.

### **Services Provided –**

- Managing Morbid Obesity
- Inguinal Hernia Repair
- Incision/Ventral Abdominal Wall Hernia Repair
- Appendicectomy
- Laparoscopic Advanced Biliary Surgery
- Management of Benign & Pancreatic Cysts

## **9. Max Institute of Paediatrics:**

Institute of Paediatrics is dedicated to provide state-of-the-art care in various paediatric specialities.

It has a team of well trained and highly experienced paediatricians and paediatric surgeons.

### **Services Provided –**

- Paediatric Surgery
- Paediatric Pulmonology
- Paediatric Gastroenterology and Hepatology
- Paediatric Cardiology and Cardiac Surgery
- Paediatric Oncology
- Paediatric Neurology
- Paediatric Nephrology
- Paediatric Endocrinology
- Development and Adolescent Paediatrics

## **10. Max Institute of Obstetrics & Gynaecology:**

The Institute of Obstetrics & Gynaecology delivers world class healthcare services for women. It is committed to highest standards of Medical and Patient Care with focus on service excellence.

### **Services Provided –**

- Preconception Counselling
- Genetic Counselling
- Antenatal care
- High Risk Pregnancy Care
- Natural And Caesarean Birth
- Painless Birth
- Post-Natal Care
- Infant Care
- Reproductive Healthcare
- Infertility treatment
- Menopause Care

- IVF (In-Vitro Fertilization)
- Family Planning & Contraception
- Minimal Invasive Surgery

### **Education Programme –**

For pregnant women the institute hold the following special Classes-

- Prenatal Classes
- Postnatal Classes
- Infant care and Breast Feeding Classes

### **LABOUR ROOM:**

Average 3 deliveries per day

1:1-→ Nurse patient ratio

3 recovery beds and 26 normal gynae beds

Shifts: 3 (morning, evening, night)

### **11. International Patient Services:**

MSSH, Saket has a department dedicated to International Patient Service which takes care of all the healthcare related and other requirements of patients and their companions coming to India.

The MSSH, Saket is amongst very few hospitals in India with an **International Patient Lounge**. The International patient services team ensures the smooth, timeless and flawless services on arrival of the patient. The Max Healthcare not only adheres all the local rules & regulations but also the international benchmarks and protocols.

### **Services Provided –**

1. Query resolution (Including Tele-consultation)
2. Travel Arrangements  
Airport Pick-up facility  
Tours and Travels
3. **Single window of contact:**  
Max healthcare provides single window of contact – ‘Relationship Manager’ to its international patients. The relationship manager helps the patient from the time of admission to discharge.  
Relationship Manager Helps patients and their companion for all requirements like accommodation, shopping, interpreters, currency exchange, wire transfers etc.
4. **Interpreter services:**  
The MSSH, Saket has both male and female, Arabic speaking, interpreters in the hospital. Interpreters for other languages are arranged as per requirement.
5. **Accommodation Arrangements:**

MSSH, Saket also make arrangements of Hotel and Guest Houses for the patients coming to the Hospital.

### **Value added services:**

- Visa Arrangement facility
- Foreign Region Registration Office registration facility
- Currency exchange and wire transfer facility
- Internet connectivity and calling card facility
- Car Hire Facility
- Choice of International Cuisine is offered
- Regular update on patient's progress
- Post discharge query handling
- Conference call services

### **Alliance Partners:**

- BUPA
- Metlife Alico
- International SOS, India
- Vanbreda International
- GMC Services
- East West Rescue
- AXA Assistance
- Cigna International
- Seven Corners Inc.
- Medicines Sans Frontieres
- AETNA

### **12.Max Institute of Medical Excellence (MIME):**

This is formed to enhance the training sessions of the employees and give them up to date knowledge and latest trends. It organises Mock drills, Workshops and Seminars to promote quality health services. It also provides opportunities to junior doctors for fellowship programmes and DNB programmes.

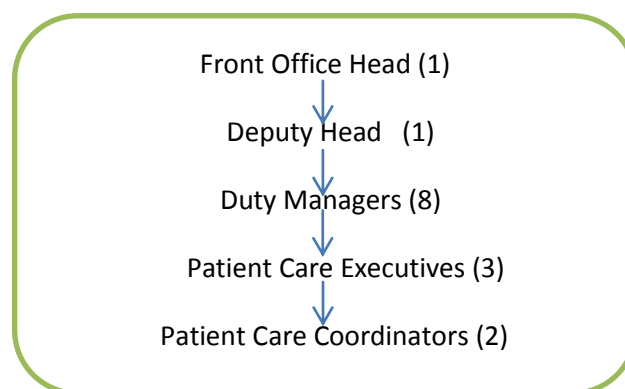
## **GENERAL FINDINGS:**

### **FRONT OFFICE:**

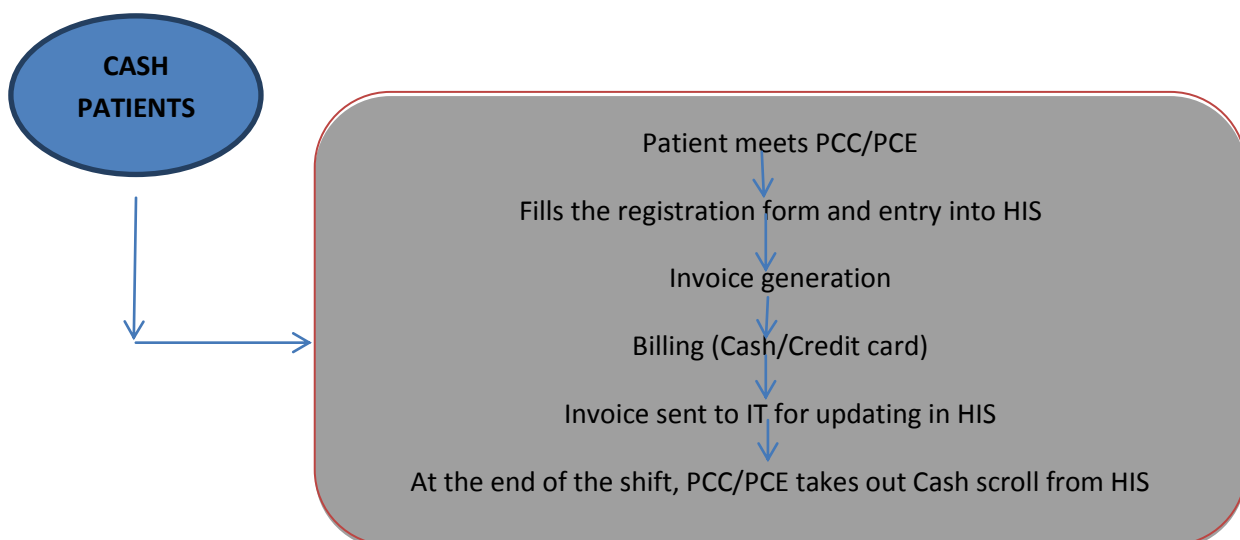
- Front office is the first point of contact between the hospital and its patients.
- Services offered by the Front Office:
- Inpatient and Outpatient registration
- IP admission and discharge
- Medical alert details

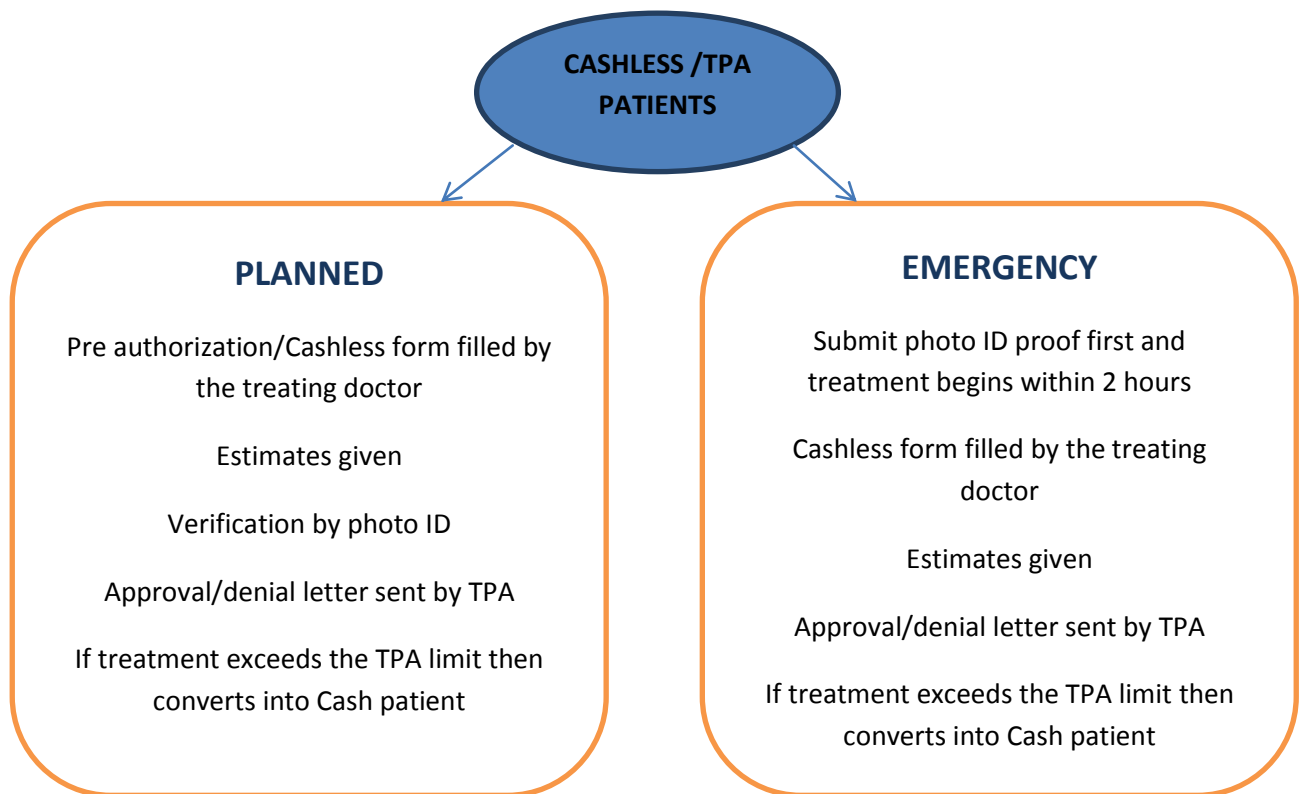
- Appointment scheduling
- Doctors schedule summary
- Patient billing both IPD and OPD
- Insurance Management Patient visit history
- Medical records movements
- Appointments for diagnostic tests
- Preventive health programme for registration and scheduling

### Organogram of the department:



### Patient Registration Process:





### OUT PATIENT DEPARTMENT SERVICES:

Each institute of Max Saket hospital has its own OPD area as well as IPD area/ Day care area wherever applicable.

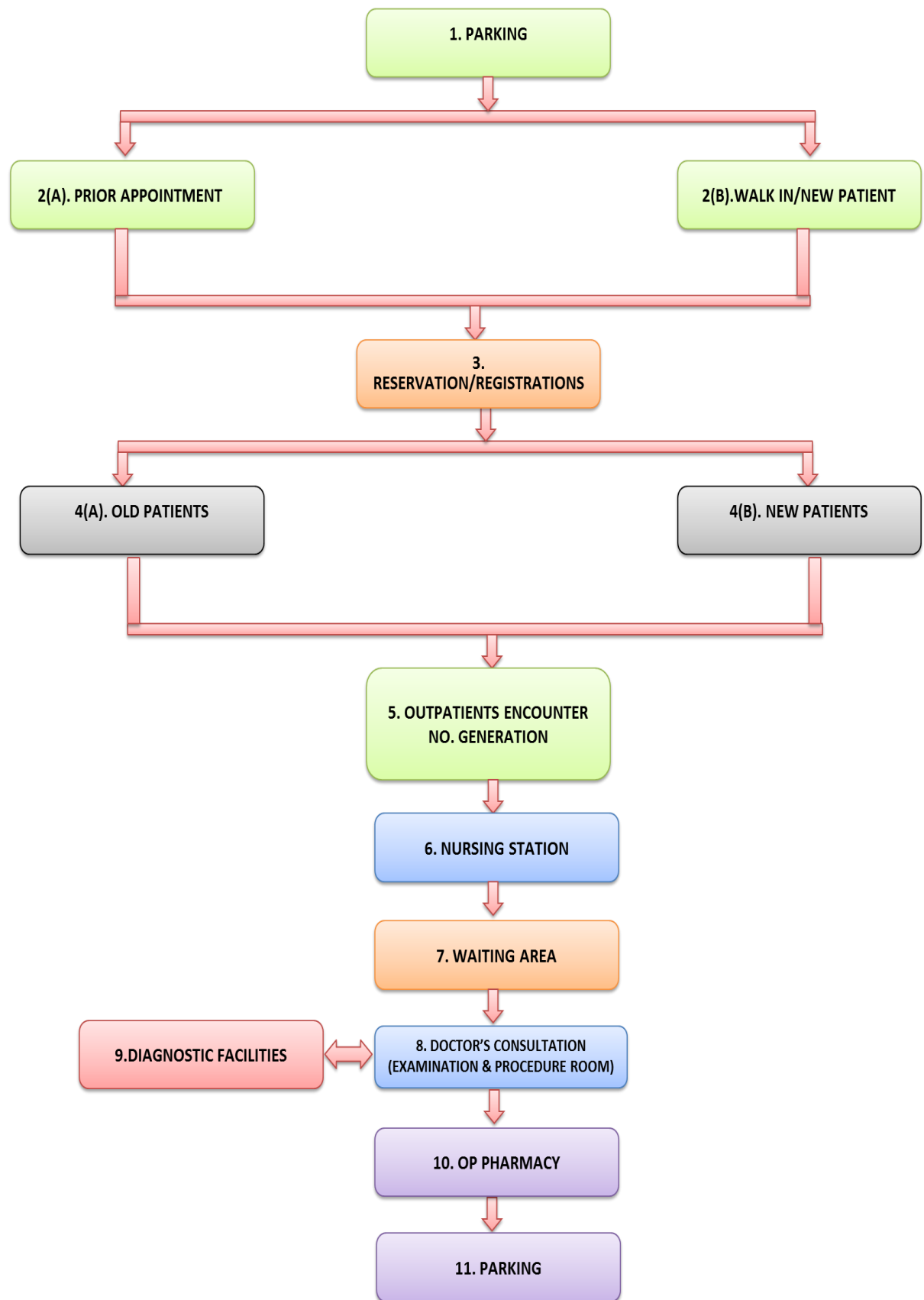
Every OPD has a procedure room and its own Front Desk.

Appointments are centralised 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 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.

For Chairperson and senior Doctors, a junior doctor does the initial assessment of the patient, which not only reduces the workload of the senior doctors but also gives 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:



## IN PATIENT DEPARTMENT (IPD):

IPD is distributed over 5 floors (2<sup>nd</sup> -6<sup>th</sup>) in the East wing of Max Saket including a total of **525 ICU** beds.

- Every bedside has:
  - Details of Nurse, Consultant and Mentor written at the top of every bed.
  - Room equipment checklist (side rails, oxygen, suction)
  - Important instructions
- The **rooms available** in the IPD have the following structures of bed per room:
  - 6 in 1
  - 4 in 1
  - 2 in 1
  - Single deluxe room
  - VIP suite

Every floor has **Central Nursing Station** with:

- **Board of information** covering designations and contact numbers of duty officers, Administration staff, Support staff. It also contains Nurses' name with designation and shift timings.
- Crash Cart parked next to the nursing station
- COWs- Computer on Wheels (4)
- Cup boards with forms (down time form, investigation track sheet, blood request form, PAC sheet, Informed consents, inventory files and registers)
- Medication room(2) with one pantry
- Record room
- Bio medical waste

### **Steps during the process flow of new patient in IPD:**

1. IPD receives intimation call from the department from where patient is referred.
  2. Duty doctor is informed.
  3. Room allotment by floor mentor.
  4. Patient admission and vitals are checked by the nurse.
  5. Physical assessment is done.
  6. History is taken.
  7. Concerned doctor is informed and medications and instructions are entered in CPRS (Computerised Patient Record System), reviewed by IPD pharmacy.
  8. Patient bill is consolidated at IP billing.
  9. Discharge intimation given by the doctor and is processed by nursing staff.
  10. Clearance by pharmacy required.
  11. Discharge TAT – 30 minutes for cash patients.
- Nurse to bed ratio- 1:4 or 1:6

- Ground duty assistants (GDAs) - 2-3 in every shift
- Average length of stay (ALOS) for normal laparoscopic surgeries—2 to 3 days
- Quality Indicators are: Patient fall, Hypoglycaemia, Needle stick injuries.

### **INTENSIVE CARE UNIT (ICUs):**

- ICUs are distributed in both the wings. Critical care services with ventilators, monitors, ECG machine, oxygen cylinders are provided here. Staff works in 3 shifts providing 24x7 cross monitoring.
- Nurse patient ratio—1:1 for ventilator patients and 2:1 for non-ventilator patients
- Separate material room and record maintenance after discharge
- The following ICUs have been visited:
  1. **Medical ICU**
  2. **Surgical ICU**
  3. **Neuro stroke ICU**
  4. **Neuro HDU**
  5. **CTVS ICU**
  6. **Ortho HDU** (High Dependency Unit)
  7. **PICU and NICU** (Paediatric and neonatal)
  8. **ISICU** (Interventional stroke)

### **EMERGENCY DEPARTMENT:**

This department is considered as the Show case of the hospital as it provides all the emergency response, management and patient care. It is located at the ground floor with its own dedicated entrance and operated for 24x7. It is an accredited Emergency Medicine training centre of George Washington University, USA.

#### **Department is divided into 4 areas:**

1. Resuscitation room
2. Monitoring area
3. Observation area
4. Walk in area

#### **Process flow steps:**

1. Patient comes in the triage and the admission request is filled by Emergency Medical Officer.
2. EMO takes the initial assessment. The records will include patient complaint, vital signs, allergies, treatment prior to arrival to E.R.
3. Treatment begins, if required specialist is called.
4. If the patient is stabilised, he/she is discharged otherwise admitted

**Ambulances:** 2 ACLS (Advance Cardiac Life Support with CCTV camera for tele medicine) and 4 BCLS (Basic Cardiac Life Support).

Patients are either transferred to other departments or are discharged within 4 hours. MSSH, Saket had made a world record for the management of MI patient in ER 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 <3 min
- Ambulance response time <10 min

### **Infrastructure:**

- Total 16 bedded triage
- Resuscitation suite- 1bed
- Urgent care area – 4 beds
- Observation area- 9beds
- Clinical decision area – 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
- Waiting area

### **Staffing:**

- Senior consultant (EMO) -2
- Team leader -1
- Emergency physicians -3
- Nurses: Male 4-5 and Female 2-3
- Receptionist -2
- GDA- 2
- Para medical staff for ambulance
- Security personnel

## **OPERATION THEATRE COMPLEX:**

There are total 23 Operation Theatres in MSSH, Saket.

Operation theatre complex of **East wing** is located on first and second floor. It has 11 operation theatres assigned to various departments. Cardiac, Oncology, Bariatric Surgeries, Gynaecology and Plastic surgeries are performed in these operation theatres. Operation theatre complex of **West wing** is located on the first floor. It has 12 operation theatres for various departments like Orthopaedics, Neurology and General Surgeries.

A new OT is coming in West Wing and constructions are going on.

### Organization of staff:

The **staff** of the O.T is organised into 4 groups:

Anaesthetist and Surgeons, Nursing Staff, Technicians, Support Staff

### Hierarchy:

#### ORGANOGRAM OF SURGEONS:

Director of Speciality  
↓  
HOD  
↓  
Senior Surgeons  
↓  
Surgeons (including J.R and Trainee)

#### ORGANOGRAM OF NURSING STAFF:

Nursing Supervisor  
↓  
Team Leader  
↓  
Staff Nurse

#### ORGANOGRAM OF TECHNICIANS:

Chief Technician  
↓  
Team Leader  
↓  
Technician

### KEY POINTS:

- Separate pre-operative and post-operative areas ( 4 beds each)
- Separate material store and pharmacy for OT
- 6 scrub stations in each OT complex
- Staff to OT table area – 2:1 (for super specialised – 3:1) (1:1 technician ratio)
- High turn over time – 20 minutes in between operations
- Shifts: 3 (morning, evening, night)
- TSSU (Theatre Sterile Supply Unit) and changing room present.
- Separate record maintenance and PACs inclusion and monitoring.
- 70% utilization of OT is there.

### STEPS in Process flow:

1. OT booking is done prior to the surgery and Patient preparation is done.
2. SIGN IN --- TIME OUT---- SIGN OUT
3. Post-operative care and medications.

## Department of Laboratory Medicine:

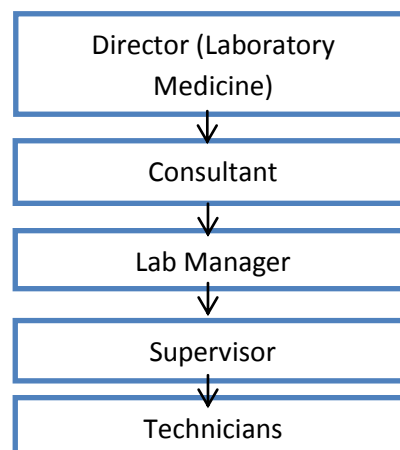
MSSH, Saket has a central lab for all the 12 branches of Max Healthcare. This lab is ISO 9001:2000 certified. It is open 24 hours a day. It's a high tech lab with fully automated instruments which are directly interfaced with hospital information system. Facility for emergency tests and sample collection from home is also available.

In the Central Lab there are different departments, these are –

- Biochemistry
- Serology
- Haematology
- Histopathology
- Clinical Pathology
- Microbiology
- Immunology

**Unique feature of this lab – This lab has BSL-3(Biological Safety Level-3).**

**Hierarchy:**



**Process Flow –**

1. Patients' sample is collected at sample collection unit.
2. Bar-coding is done for each sample for identification.
3. Then it comes to pathology lab
4. Here different tests are done accordingly
5. After testing, reports are sent to main OPD, from where patients collect their reports.
6. In upcoming software update patients will be able to see their test reports online also.

## **Blood Bank:-**

MSSH, Saket has its own Blood Bank. Blood bank administration ensures that all the blood groups should be available every in the blood bank. For this the hospital asks patient's attendants to give replacement for the blood given. The blood bank receives 40-50 units of blood per day. It maintains a stock of 250 Units/day of each blood group.

Blood Bank consists of –

1. Reception Area
2. Donation Area
3. Apheresis Area
4. Component Room
5. Transfusion Transmitted Infection (TTI) Room
6. Storage Area
7. Issue Counter

Staff of Blood Bank consists of 1 HOD, 2 Blood Bank officers, 1 Technician Supervisor, 16 technicians, 2 staff Nurse, 2 Computer Executives, and 4 GDA.

## **Bio Medical 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.
- The Department also deals with the in-house calibration of equipment.
- Gas Manifolds are also handled by the biomedical department.

The Areas Included are:

- All Wards
- All Operation Theatres
- All ICUs
- Patients Rooms
- Radiology
- Triage
- Blood Bank
- Nuclear Medicine
- Cardiac Non Invasive Diagnostics
- Medical Gases
- Medical Furniture
- LINAC

### **Objective:**

- 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 equipment.
- Preventive maintenance for Medical Gas Equipment.
- Allotment of AMC and CMC contracts.

The Department of Biomedical Engineering consists of following staff-

Regional Manager, Deputy Manager, Medical Gas Supervisor, Senior Biomedical Engineer, Biomedical Engineer, Medical Gas Technician, Junior Biomedical Engineer.

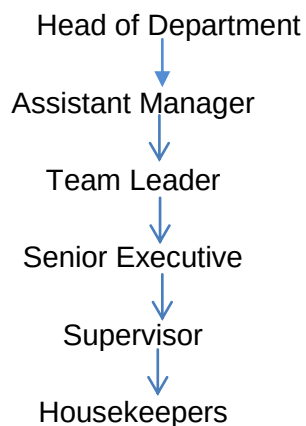
### Housekeeping Department:

The Housekeeping department is responsible for four main processes-

1. Infrastructure Cleaning- It includes
  - a) Interior Cleaning
  - b) Exterior Cleaning
2. General and Biomedical waste Handling
  - a) Waste collection process-
  - b) Waste Treatment and Disposal Process-
3. Linen And Uniform Management
  - a) Linen Management
  - b) Uniform Management

Laundry Process
4. Interior Decoration-

### **Hierarchy-**



### Radiology Department –

The Radiology Department of MSSH, Saket is equipped with ultramodern machines.

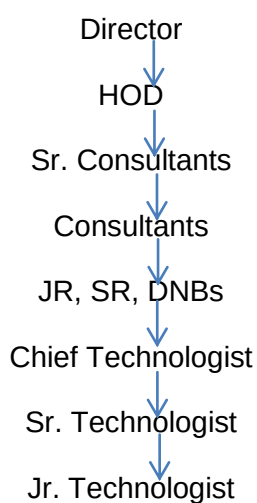
### **Procedures done in the department are –**

1. X-Ray ( plain and routine fluoroscopic procedures i.e. Barium studies)

2. Ultrasound (Ultrasonography and Doppler studies)- 4 machine stations
3. Mammography - 1 station
4. Dexascan – 1 station
5. Special Imaging Techniques like-
  - a) CT Scan (Computerised Axial Tomography)
  - b) MRI (Magnetic Resonance Imaging)

| Procedure Name        | No. of Procedures Per Day |
|-----------------------|---------------------------|
| X—Rays                | 250-300                   |
| MRI, CT Scan          | 40-50                     |
| USG                   | 100                       |
| Mammography, Deaxscan | 15-20                     |
| Procedures            | 4-5                       |

### Hierarchy-



### Radiology Department consists of:

- Reception area- Counter areas for appointment and billing
- Waiting room with general facilities
- Diagnostic room
- Cancelling room
- Changing room
- Film processing room
- Radiologist office
- Report collection room

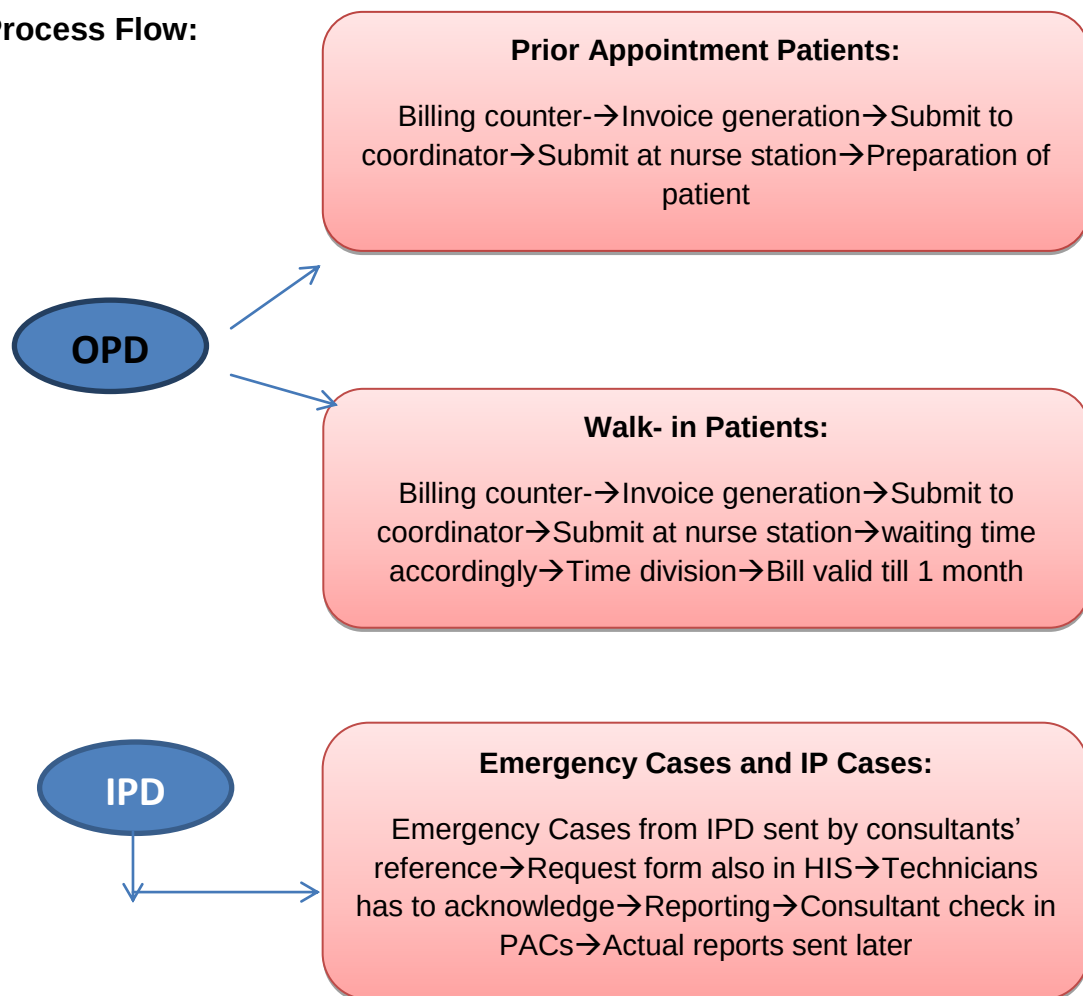
**Main OPD hours:** 8 am to 6pm and after 8 pm only IPD and Emergency patients are taken.

### **TATS for REPORTING:**

For USG --- 8am to 12pm (same day) then report is ready and collected by 5 pm

For Tests --- If tests are performed before 12 pm then reports are ready by evening and if done after 12pm, reports will be delivered next day 11am.

### **Process Flow:**



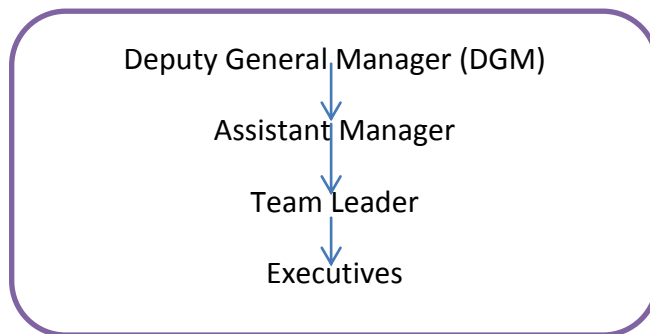
**Appointment patients are given preference whereas walk in patients has to wait. Emergency, doctor's referred patients or ICU patients scan is done as soon as possible.**

### **FOOD AND BEVERAGES AND DIETETICS:**

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

Although food and beverages department at the Max healthcare is outsourced to the SODEXO food services but controlling power is with Max employees.

**ORGANOGRAM:**



The department consists of 1 Head Chef from Max, 26 Chefs from Sodexo, 72 stewards from Sodexo.

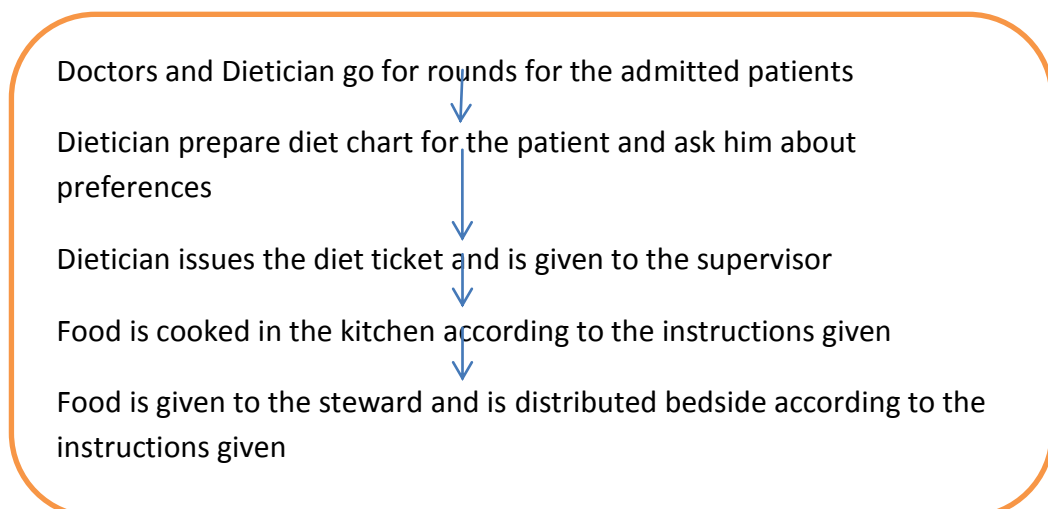
Dietician -> 25 of Max

Max Chef keeps check on quality of food provided to the patients and make sure dieticians have checked the food for IPD patients.

**Other than Sodexo there are various other food outlets:**

- Sagar Ratna
- Café Coffee Day
- Subway
- Quality Express (Royalties are being charged from these outlets)

**SUPPLY PROCESS OF FOOD TO THE PATIENTS:**



### **Time Table for the diet of the patient:**

|                |                 |
|----------------|-----------------|
| 7-8 AM         | Breakfast       |
| 10.30-11:30 AM | Soups/Beverages |
| 1-2 PM         | Lunch           |
| 4-5 PM         | Evening tea     |
| 6-7 PM         | Soup            |
| 8-9 PM         | 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 dieticians 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 is:**

- a) Indian menu
- b) Afghani menu for Middle East patients
- c) Continental menu
- d) No onion no garlic menu for Jain patients

### **QUALITY DEPARTMENT:**

It is divided into 3 main types:

- 1. Medical Quality Department**
- 2. Nursing Quality Department**
- 3. Service Quality Department**

#### **1. Medical Quality Department:**

The main office is located at Okhla Corporate Office (PAN MAX) and is headed by the director followed by Vice President.

MSSH, Saket has Zonal office of Medical Quality who monitors the working of Assistant managers and executives.

#### **The different Indicators of Medical Quality are:**

- Falls
- Nosocomial Infections
- Phlebitis
- Medication errors
- Near miss (incident might have occurred)
- Needle stick injury

- Pressure sores
- Hypoglycaemia
- Adverse drug reactions
- Blood transfusion and related errors
- Infection outbreak
- Sentinel events→ wrong patient, wrong surgery, wrong side, foreign bodies left inside body cavities.
- Code Blue-> Rapid Response Team
- Mortality
- Readmissions within 14 days of discharge → Return to Emergency within 7 days
- Return to O.T within 7 days
- Return to ICU within 7 days

## **2. Nursing Quality Department:**

This department helps to maintain the quality nursing care.

There are total 7 indicators of nursing quality:

1. Patient falls
2. Medication errors:
  - Prescription error → by Doctor
  - Dispensing error → by Pharmacist
  - Administration error→ by Nurses
  - Documentation error→ BY Nurses
3. Pressure sores (outside→ before admission and inside→ after admission sores are formed)
4. Hypoglycaemia
5. Needle Stick injuries
6. Healthcare associated infections (CLABSI, CAUTI, VAP, and SSI)
7. Phlebitis

## **3. Service Quality Department:**

It deals with the quality of services provided by the hospital in form of feedbacks.

Feedback forms are kept in suggestion boxes in each department and are collected daily. These are then divided into positive and negative feedbacks. Suggestions are also considered as negative feedbacks and are raised in Board Meetings for improvements.

After getting the negative feedbacks from the various departments, within 24 hrs the respective departments are intimidated about the negative feedbacks and further rectifications and improvements are started. Root cause analysis is done by the managers to understand the main cause and the problem is solved in 72 hours.

The problem is resolved and closure of the case is done by providing proper training and counselling by the Managers.

Ways to collect the feedback:

- a) Through feedback forms
- b) Through Blogs
- c) Directly to the quality manager

Issues can be related to:

- Behaviour of the staff, nurses, doctors
- Cleanliness
- Food quality
- Medication errors
- Delay in any services

Everyday Quality manager goes for rounds in each and every department and inspect the quality issues and keep encouraging quality care services.

## Security Department-

The security department is an eye and ear of every organization acting as a liaison between management and staff. The department is having one control room on B1 (Basement 1) of East Wing.

Functions of Security Department-

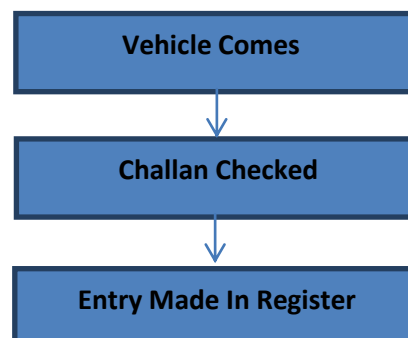
### **1. Security Management-**

- Selection of people (Guards and Supervisors)
- Deploying of Security staff
- Checking of people entering the hospital
- Turnout and grooming of security staff
- MLC handling
- Dispute Management

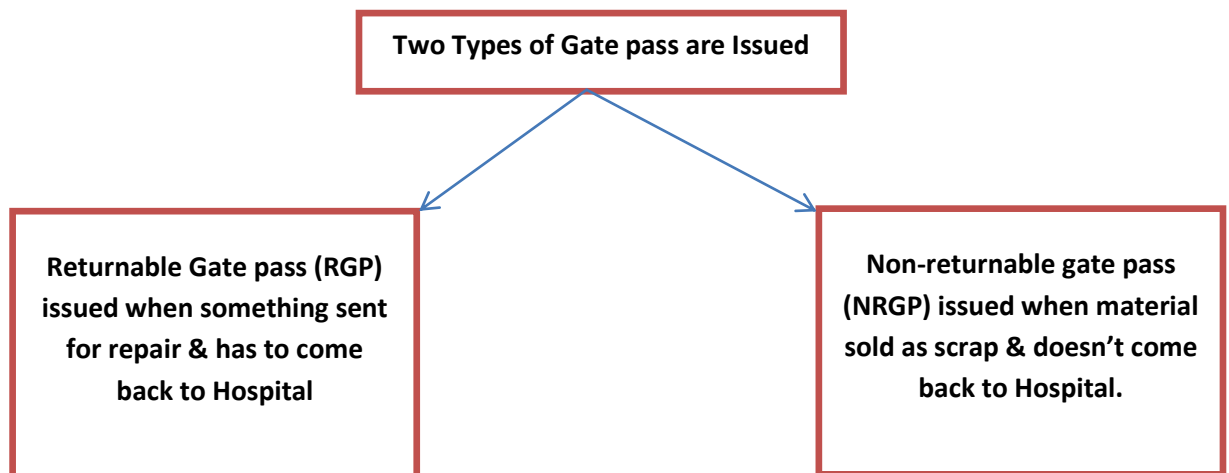
### **2. Material Management-**

This includes the management of both incoming and outgoing materials.

- a) **Incoming Materials-** The incoming materials are received either from a company or a contractor to Max. The Process followed is-



#### b) Outgoing Materials-



### 3. Disaster Management-

There are six emergency codes according to which the security department works.

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

### 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.

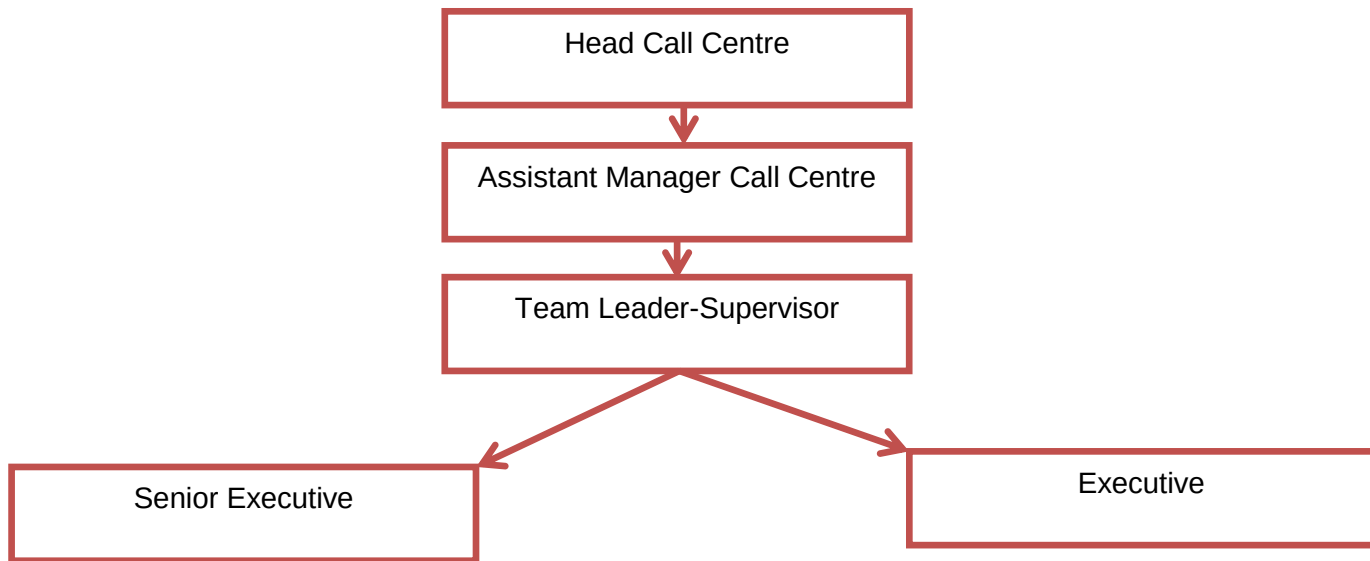
### Call Centre -

Call centre of MSSH, Saket operates 24\*7. It is centralized patient contact centre for saket. It can be used as information centre for all the 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
- Handles internal emergency also e.g. Code Blue

Main Board line number is 26515050



Currently the MSSH, Saket is using two soft wares for its working.

1. HIS-Hospital Information System
2. CPRS- Computerised Patient Record System

**Modules of HIS** are –

1. Outpatient
2. Inpatient
3. Physician
4. Laboratory
5. Emergency
6. Administration
7. MIS Reports
8. IP Billing

**CPRS** is designed for the clinicians.

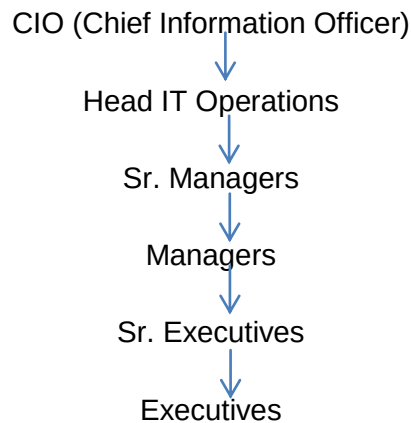
The IT department uses two types of servers for the running of these two softwares-

1. Application Server
2. Production Server

The MSSH, Saket also uses some need based and departmental soft wares also like-

1. For the HR management the Hospital uses the ERP software named as “DISHA”.
2. For the imaging services the PACS software by GE is being used.
3. For Stock management IMAC software is being used.
4. ASSIST software is being used for the problem solving within the departments.

## Hierarchy-



## Marketing Department –

The MSSH, Saket is having its internal Marketing Department. The department is divided into 4 primary categories.

1. Domestic Marketing
2. International Marketing
3. Branding and communication
4. Sales

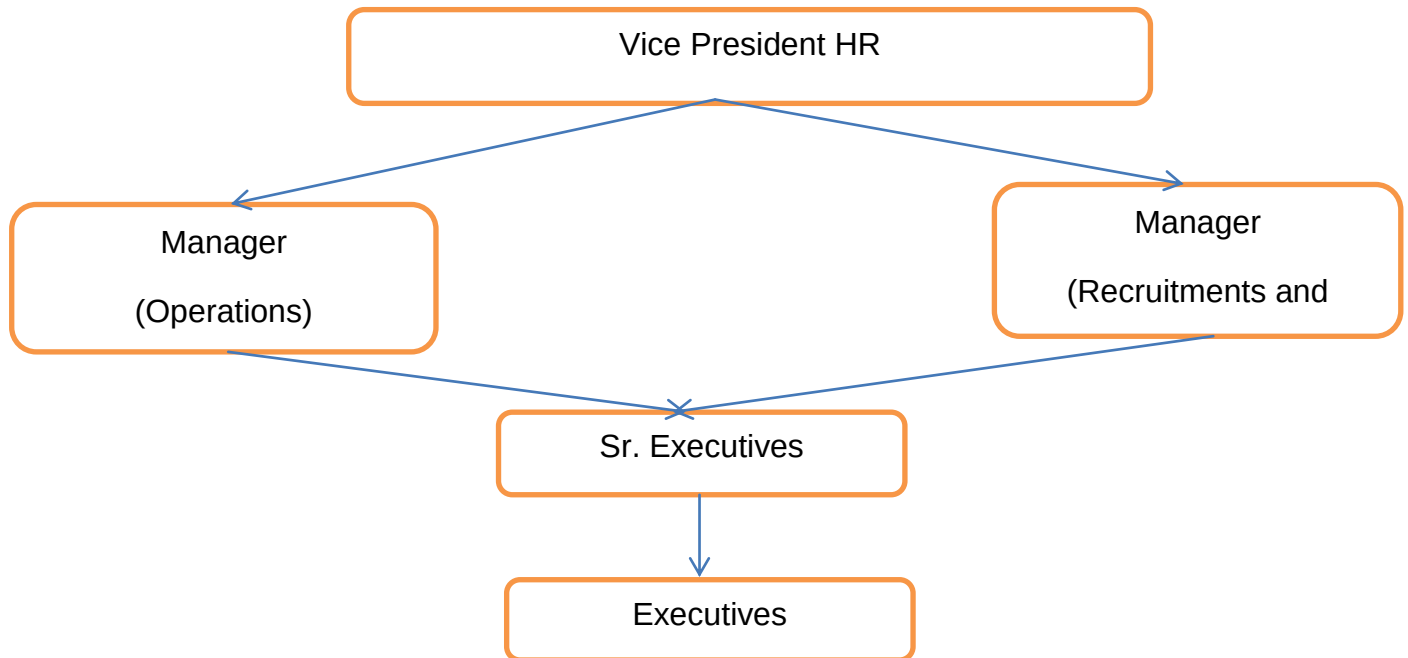
## Human Resource Management Department-

Human resource management department is a function designed to maximize employee performance in service of their employer's strategic objectives. HR is primarily concerned with how people are within the 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 and Grievances Redressal policy
- Disciplinary Policy
- Medical Discount Policy
- Annual Medical Check-up policy
- Clinical credentialing & privileging policy
- Nursing credentialing & privileging policy

## Hierarchy –



## OUTSOURCED DEPARTMENTS:

- **MRD (MEDICAL RECORD DEPARTMENT)** → By StarBic
- **BIO MEDICAL WASTE MANAGEMENT**→ By Synergy Bio Medical Waste Management Pvt limited
- **Lower Staff of Housekeeping**→ by BVG India
- **Lower Staff of Security**→ by INNOVISSION

## Departments mainly in Okhla Corporate Office of Max Healthcare:

- FINANCE
- LEGAL COMPLIANCE
- BUISNESS DEVELOPMENT
- SEVICE EXCELLENCE
- COMMERCIALS

## **PROJECT REPORT 1:**

### **OPERATIONAL EFFICIENCY MODEL FOR STREAMLINING THE PRE RENAL TRANSPLANT WORKUP CONSIDERING PATIENT SATISFACTION LEVEL**

## **INTRODUCTION:-**

Chronic kidney disease (CKD) is a major health concern in this country afflicting more than eight million Indians. When kidney function declines to a certain level, patients have end-stage renal disease and require either dialysis or transplantation to sustain their life. The prevalence of these two populations of end-stage renal disease has tripled in the last 20 years.

Chronic kidney disease may be caused by diabetes, high blood pressure and other disorders. Early detection and treatment can often keep chronic kidney disease from getting worse.<sup>1</sup>

The **kidneys** are powerful chemical factories that perform the following functions:

- Remove waste products from the body
- Remove drugs from the body
- Balance the body's fluids
- Release hormones that regulate blood pressure
- Produce an active form of vitamin D that promotes strong, healthy bones
- Control the production of red blood cells

Before the advent of immuno suppression, renal transplantation was limited to human leukocyte antigen (HLA)–identical (HLA-ID) siblings and was not applicable to the vast majority of patients with ESRD. Although this therapy improved the results of transplantation, acute rejection and complications associated with steroid therapy still persists.

Currently, 1-year patient and graft survival rates exceed 90% in most transplant centres.<sup>1</sup>

## **The Facts about Chronic Kidney Disease (CKD):<sup>2</sup>**

- 26 million Indian adults have CKD and millions of others are at increased risk.
- Early detection can help prevent the progression of kidney disease to kidney failure.
- Heart disease is the major cause of death for all people with CKD.
- Glomerular filtration rate (GFR) is the best estimate of kidney function.
- Hypertension causes CKD and CKD causes hypertension.
- Persistent proteinuria (protein in the urine) means CKD is present.
- High risk groups include those with diabetes, hypertension and family history of kidney failure.
- African Americans, Hispanics, Pacific Islanders, American Indians and seniors are at increased risk.
- Two simple tests can detect CKD: blood pressure, urine albumin and serum creatinine.

## **PROBLEM STATEMENT:-**

How efficiently the Renal Transplant Unit of Max Super Speciality Hospital is contributing to operational excellency?

**OBJECTIVES:-**

1. To analyse the level of satisfaction among the transplant patients of last 6 months.
2. To determine the leading factors contributing to working efficiency of transplant unit.
3. To streamline the lacking factors recognised by patient satisfaction level.

**NEED OF THE STUDY:-**

1. This study will establish the relationship between the work efficiency of renal transplant unit and the level of patient satisfaction achieved.
2. The major goal for the study is to determine the facts which will state that the higher work efficiency will lead to the higher patient satisfaction.

**DISCUSSION:**

The treatments for end-stage renal disease are haemodialysis, a mechanical process of cleaning the blood of waste products; peritoneal dialysis, in which waste products are removed by passing chemical solutions through the abdominal cavity; and kidney transplantation.

However, while none of these treatments cure end-stage renal disease, a transplant offers the closest thing to a normal life because the transplanted kidney can replace the failed kidneys. However, it also involves a life-long dependence on drugs to keep the new kidney healthy. Some of these drugs can have severe side effects.

Some kidney patients consider a transplant after beginning dialysis; others consider it before starting dialysis. In some circumstances, dialysis patients who also have severe medical problems such as cancer or active infections may not be suitable candidates for a kidney transplant.

**Kidney Transplantation:**

Kidneys for transplantation come from two different sources:

- A living donor
- A deceased donor

**Transplant Evaluation Process:**

Regardless of the type of kidney transplant-living donor or deceased donor-special blood tests are needed to find out what type of blood and tissue is present. These test results help to match a donor kidney to the recipient.

**A. Blood Type Testing:**

The first test establishes the blood type. There are four blood types: A, B, AB, and O. Everyone fits into one of these inherited groups. The recipient and donor should have

either the same blood type or compatible ones, unless they are participating in a special program that allow donation across blood types. The list below shows compatible types:

- If the recipient blood type is A Donor blood type must be A or O
- If the recipient blood type is B Donor blood type must be B or O
- If the recipient blood type is O Donor blood type must be O
- If the recipient blood type is AB Donor blood type can be A, B, AB, or O

The AB blood type is the easiest to match because that individual accepts all other blood types.

Blood type O is the hardest to match. Although people with blood type O can donate to all types, they can only receive kidneys from blood type O donors. For example, if a patient with blood type O received a kidney from a donor with blood type A, the body would recognize the donor kidney as foreign and destroy it.

### **B. Tissue Typing:**

The second test, which is a blood test for human leukocyte antigens (HLA), is called tissue typing. Antigens are markers found on many cells of the body that distinguish each individual as unique. These markers are inherited from the parents. Both recipients and any potential donors have tissue typing performed during the evaluation process.

To receive a kidney where recipient's markers and the donor's markers all are the same is a "perfect match" kidney. Perfect match transplants have the best chance of working for many years. Most perfect match kidney transplants come from siblings.

Although tissue typing is done despite partial or absent HLA match with some degree of "mismatch" between the recipient and donor.

### **C. Cross match:**

Throughout life, the body makes substances called antibodies that act to destroy foreign materials. Individuals may make antibodies each time there is an infection, with pregnancy, have a blood transfusion, or undergo a kidney transplant. If there are antibodies to the donor kidney, the body may destroy the kidney. For this reason, when a donor kidney is available, a test called a cross match is done to ensure the recipient does not have pre-formed antibodies to the donor.

The cross match is done by mixing the recipient's blood with cells from the donor. If the cross match is positive, it means that there are antibodies against the donor. The recipient should not receive this particular kidney unless a special treatment is done before transplantation to reduce the antibody levels. If the cross match is negative, it means the recipient does not have antibodies to the donor and that they are eligible to receive this kidney.

Cross matches are performed several times during preparation for a living donor transplant, and a final cross match is performed within 48 hours before this type of transplant.

#### **D. Serology:**

Testing is also done for viruses, such as HIV (human immunodeficiency virus), hepatitis, and CMV (cytomegalovirus) to select the proper preventive medications after transplant. These viruses are checked in any potential donor to help prevent spreading disease to the recipient.

#### **Phases of Transplant:**

##### **1. Pre-transplant Period:**

This period refers to the time that a patient is on the deceased donor waiting list or prior to the completion of the evaluation of a potential living donor. The recipient undergoes testing to ensure the safety of the operation and the ability to tolerate the anti-rejection medication necessary after transplantation. The type of tests varies by age, gender, cause of renal disease, and other concomitant medical conditions.

##### **2. Transplant Surgery Period:**

The transplant surgery is performed under general anaesthesia. The operation usually takes 2-4 hours. This type of operation is a **heterotrophic transplant** meaning the kidney is placed in a different location than the existing kidneys. (Liver and heart transplants are **orthotropic transplants**, in which the diseased organ is removed and the transplanted organ is placed in the same location.) The kidney transplant is placed in the front (anterior) part of the lower abdomen, in the pelvis.

**The original kidneys are not usually removed** unless they are causing severe problems such as uncontrollable high blood pressure, frequent kidney infections, or are greatly enlarged. The artery that carries blood to the kidney and the vein that carries blood away is surgically connected to the artery and vein already existing in the pelvis of the recipient. The ureter, or tube, that carries urine from the kidney is connected to the bladder. Recovery in the hospital is usually 3-7 days.

##### **3. Post-Transplant Period:**

The post-transplant period requires close monitoring of the kidney function, early signs of rejection, adjustments of the various medications, and vigilance for the increased incidence of immunosuppression-related effects such as infections and cancer.

Just as the body fights off bacteria and viruses (germs) that cause illness, it also can fight off the transplanted organ because it is a **"foreign object."** When the body fights off the transplanted kidney, **rejection occurs.**

**Rejection** is an expected side effect of transplantation and up to 30% of people who receive a kidney transplant will experience some degree of rejection. Most rejections occur within six months after transplantation, but can occur at any time, even years later. Prompt treatment can reverse the rejection in most cases.

## **Anti-Rejection Medications:**

Anti-rejection medications, also known as immunosuppressive agents, help to prevent and treat rejection. They are necessary for the "lifetime" of the transplant. If these medications are stopped, rejection may occur and the kidney transplant will fail.

## **TYPES:**

### **1. Living Donor Kidney Transplantation:**

Living donor kidney transplants are the best option for many patients for several reasons.

- Better long-term results
- No need to wait on the transplant waiting list for a kidney from a deceased donor
- Surgery can be planned at a time convenient for both the donor and recipient
- Lower risks of complications or rejection, and better early function of the transplanted kidney

## **Facts related to DONOR:**

Any healthy person can donate a kidney. When a living person donates a kidney the remaining kidney will enlarge slightly as it takes over the work of two kidneys.

Donors do not need medication or special diets once they recover from surgery. As with any major operation, there is a chance of complications, but kidney donors have the same life expectancy, general health, and kidney function as most other people. The kidney loss does not interfere with a woman's ability to have children.

If a person successfully completes a full medical, surgical, and psychosocial evaluation they will undergo the removal of one kidney.

The operation takes 2-3 hours. Recovery time in the hospital is typically 1-3 days. Donors often are able to return to work as soon as 2-3 weeks after the procedure.

### **2. Paired Exchange Kidney Transplant (or "Family Swap"):**

This program is another way for a living donor to benefit a loved one even if their blood or tissue types do not match.

A "paired exchange" allows patients who have willing but incompatible donors to "exchange" kidneys with one another-the kidneys just go to different recipients than usually expected.

That means that two kidney transplants and two donor surgeries will take place on the same day at the same time.

### **3. Cadaveric organ donation:**

Here, the transplantation occurs via brain death or MLCs. This organ donation is performed via THO Act 2011 and no organ sales and purchase are permitted. Here patient who are at verge of death or brain death patients' relatives give the consent and give organs for transplantation.

### Transplant Success Rates:

The success rate of kidney transplantation varies depending on whether the donated organ is from a living donor or a deceased donor as well as the medical circumstances of the recipient.

Kidneys from living donors generally last longer. Most kidney losses are due to rejection, but infections, circulation problems, cancer, and return of the original kidney disease can also cause kidney loss.

| Success Rate of Kidney Transplantation |                  |         |         |          |
|----------------------------------------|------------------|---------|---------|----------|
| Type of Donor                          | 1 Year           | 3 Years | 5 Years | 10 Years |
| Living Donor                           | Graft survival   | 95%     | 88%     | 80%      |
|                                        | Patient survival | 98%     | 95%     | 90%      |
| Deceased Donor                         | Graft survival   | 90%     | 79%     | 67%      |
|                                        | Patient survival | 95%     | 88%     | 81%      |

Source: SRTR -- Scientific Registry of Transplant Recipients

In contrast, dialysis patients have 4-7 fold greater chance of dying as compared to transplant recipients.

### PATIENT EXPECTATION AND SATISFACTION:-

The satisfaction of patients coming to hospitals depends on the structure and function of the medical care system. The functioning of medical care system is based on the various social, technical and physical aspects. The structure of the medical care system is guided by the policies of the government and the type of government set-up prevailing in the country, whereas the functioning mainly depends on those who manage the system. In a welfare state like India, where the government takes up the responsibility of providing free medical care to those who are unable to afford it, free consultation, medicines and treatment facilities have to be provided. Those receiving these kind of services may be satisfied with whatever services are being provided to them in the hospitals because they are free of cost. But, as soon as they come to realize that it is their right to receive these services and it is the responsibility of government to look after their well-being, when they cannot afford, rise in their level of expectations is uncontrollable.

### RESEARCH METHODOLOGY:-

- Carrying out survey amongst patients who had undergone the renal transplant procedure at Max Super Speciality Hospital, Saket, New Delhi.
- Type of Study – Descriptive research study

- Study population- All domestic patients gone through Renal Transplant Procedure during the time period October 2014 to March 2015.
- Study Area – Max Super Speciality Hospital, Saket.
- Type of Data – Quantitative and Qualitative
- Techniques – Telephonic and Personal Interviews
- Tool – Questionnaire
- Data Collection – Primary and quantitative
- Data Analysis – By analysing the data using appropriate statistical methods and by creating various graph using Microsoft Excel

**PATIENT AS A CONSUMER:-** Marketing experts are aware that consumers make their decision about utilization of services on the basis of their perception of the service rather than the reality and hence marketing and patient satisfaction have become of paramount importance as mouth-to-mouth publicity and personal referral is the most common and influential cause of using a particular health facility. Healthcare facility is very difficult to measure; hence, it is a challenge to a healthcare provider to influence a patient's perception of quality of care.

A patient's satisfaction may not be totally influenced by the quality of care. A patient's satisfaction may not be totally influenced by the quality of physician available, but it reflects how the medical care has been delivered. To provide highest level of satisfaction that is profitable to both the patient and the provider, management must control both the perception of expectation and the quality of delivery of the healthcare services. Knowledge of expectation and the factors affecting them, combined with knowledge of actual and perceived healthcare quality, provides the necessary information for designing and implementing programs to satisfy patients.

#### **STEPS FOR DATA COLLECTION AND ANALYSIS:**

The author is going to conduct this study with the help of two following questionnaire. The first questionnaire will collect the information about the level of satisfaction among the renal transplant patients. The second questionnaire will bring out the work efficiency in form of total time taken in completing various procedures.

#### **QUESTIONNAIRE TO DETERMINE THE SATISFACTION LEVEL:-**

##### **IN PATIENT SATISFACTION AND SUGGESTION FORM**

Dear Friend, Please spend few minutes to give your valuable feedback and suggestions. It will help us to improve the quality of services and serve you better.

Name: \_\_\_\_\_

Age: \_\_\_\_\_

Address and Contact No.: \_\_\_\_\_

Date of admission: \_\_\_\_\_

Date of discharge: \_\_\_\_\_

Date of Transplant: \_\_\_\_\_

Doctor in charge: \_\_\_\_\_

Please rest assured that your name and identity will be kept confidential.

### **SATISFACTION ASSESSMENT QUESTIONNAIRE**

| <b>Facilities and Staff</b>                                   | <b>Excellent<br/>(10/10)</b> | <b>Good<br/>(7/10)</b> | <b>Fair<br/>(5/10)</b> | <b>Poor (3/10)</b> |
|---------------------------------------------------------------|------------------------------|------------------------|------------------------|--------------------|
| <b>1. OPD Counter Services</b>                                |                              |                        |                        |                    |
| <b>2. Doctor's Consultation and explanation about disease</b> |                              |                        |                        |                    |
| <b>3. Documentation and Legal processing</b>                  |                              |                        |                        |                    |
| <b>4. Admission process</b>                                   |                              |                        |                        |                    |
| <b>5. Housekeeping and food services</b>                      |                              |                        |                        |                    |
| <b>6. Nursing services</b>                                    |                              |                        |                        |                    |
| <b>7. Behaviour of complete staff</b>                         |                              |                        |                        |                    |

Please tell us the Total time consumed in following procedures:-

| <b>Procedures</b>                    | <b>Time Taken in completion</b> | <b>Expectation</b> |                 |             |
|--------------------------------------|---------------------------------|--------------------|-----------------|-------------|
|                                      |                                 | <b>Low</b>         | <b>Moderate</b> | <b>High</b> |
| <b>1. OPD</b>                        |                                 |                    |                 |             |
| <b>2. Medico Legal Documentation</b> |                                 |                    |                 |             |
| <b>3. Lab Investigations</b>         |                                 |                    |                 |             |
| <b>4. Clearances</b>                 |                                 |                    |                 |             |
| <b>5. Surgery</b>                    |                                 |                    |                 |             |
| <b>6. Post-Operative Care</b>        |                                 |                    |                 |             |

Areas which need the changes most:

1. \_\_\_\_\_

2. \_\_\_\_\_

Your additional comments and recommendations are appreciated:

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Would you recommend Max Hospital to others? Yes/ No If No, give reasons

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Thanking you for taking time to fill out this survey. You can be assured we will take corrective measures on your comments in the required areas to improve the services up to your expectation.

Wish you good health and good fortune.

Thank you very much for your cooperation.

The questionnaire was prepared to get two types of responses from the patients.

1. First to check the **satisfaction level**
2. Second to analyse the **total time taken** in the completion of various procedures.

Researcher asked the patients to rate the facilities on a four point scale. A rating pattern was created for the scoring of the same.

1. Excellent= 10 Points
2. Good= 7 Points
3. Fair= 5 Points
4. Poor= 3 Points

For the analysis of the time, researcher asked the patients to mention the time consumed was “**Low**”, “**Moderate**” or “**High**”.

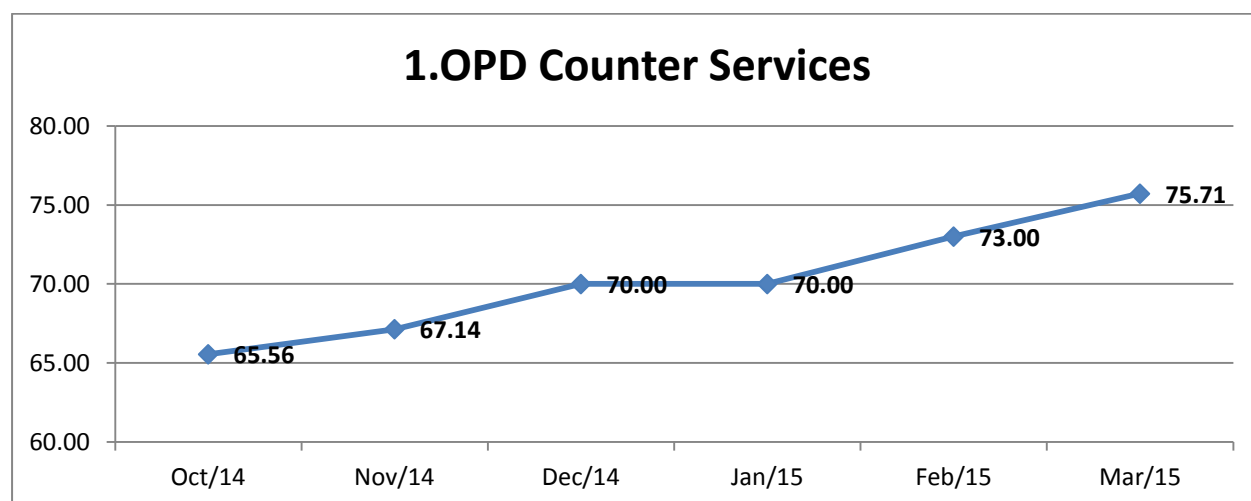
The survey was conducted successfully and the following findings were received.

## Findings:-

### 1. Analysis of Satisfaction Level For Different facilities

#### 1. OPD Counter Services

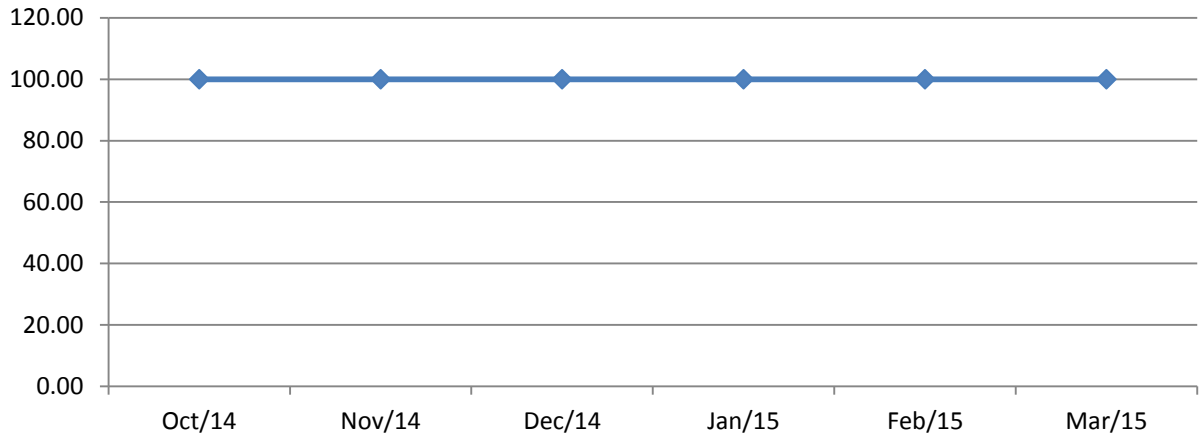
| Month         | Percentage   |
|---------------|--------------|
| Oct-14        | 65.56        |
| Nov-14        | 67.14        |
| Dec-14        | 70.00        |
| Jan-15        | 70.00        |
| Feb-15        | 73.00        |
| Mar-15        | 75.71        |
| <b>Median</b> | <b>70.00</b> |



#### 2. Doctor's Consultation and explanation about disease

| Month         | Percentage    |
|---------------|---------------|
| Oct-14        | 100.00        |
| Nov-14        | 100.00        |
| Dec-14        | 100.00        |
| Jan-15        | 100.00        |
| Feb-15        | 100.00        |
| Mar-15        | 100.00        |
| <b>Median</b> | <b>100.00</b> |

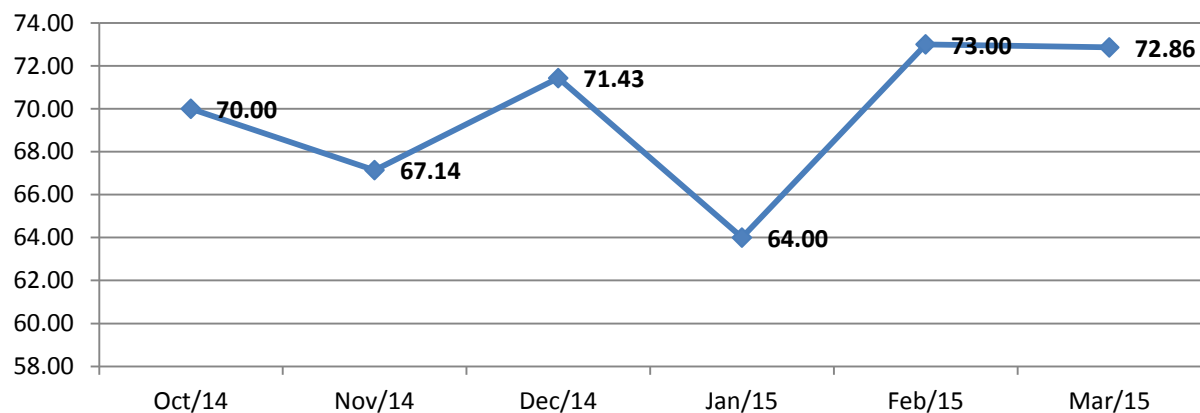
## 2.Doctor's Consultation and explanation about disease



### 3. Documentation and Legal processing

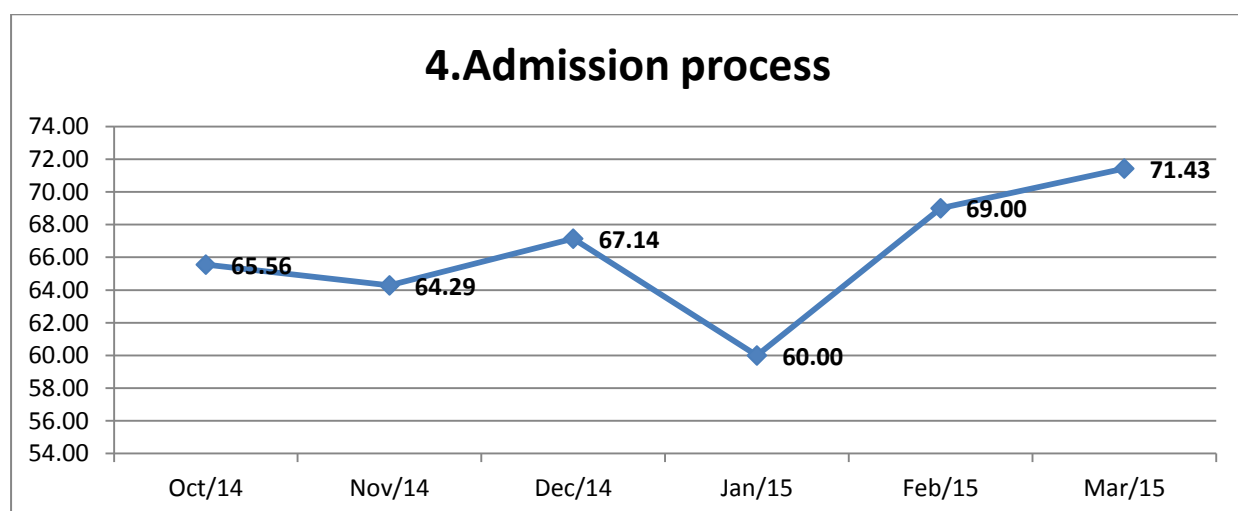
| Month         | Percentage   |
|---------------|--------------|
| Oct-14        | 70.00        |
| Nov-14        | 67.14        |
| Dec-14        | 71.43        |
| Jan-15        | 64.00        |
| Feb-15        | 73.00        |
| Mar-15        | 72.86        |
| <b>Median</b> | <b>70.71</b> |

### 3.Documentation and Legal processing



#### 4. Admission process

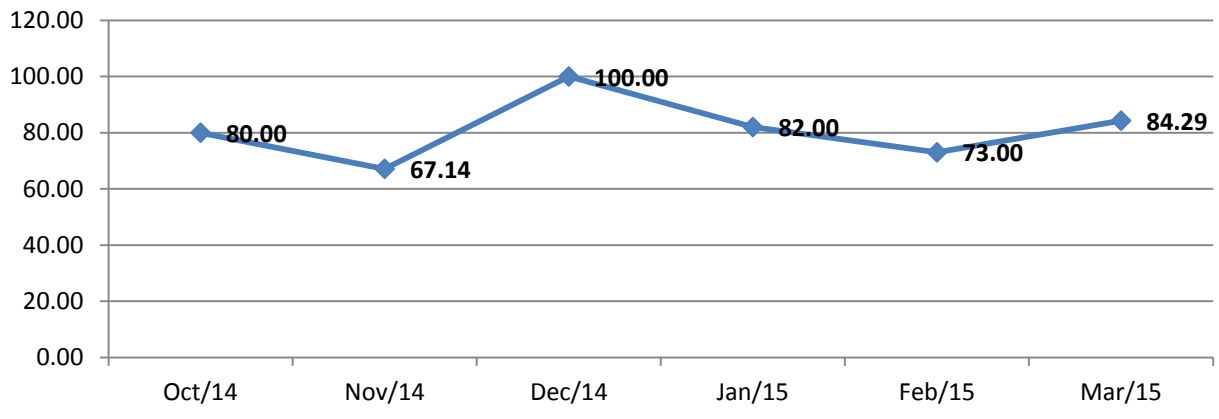
| Month         | Percentage   |
|---------------|--------------|
| Oct-14        | 65.56        |
| Nov-14        | 64.29        |
| Dec-14        | 67.14        |
| Jan-15        | 60.00        |
| Feb-15        | 69.00        |
| Mar-15        | 71.43        |
| <b>Median</b> | <b>66.35</b> |



#### 5. Housekeeping and food services

| Month         | Percentage   |
|---------------|--------------|
| Oct-14        | 80.00        |
| Nov-14        | 67.14        |
| Dec-14        | 100.00       |
| Jan-15        | 82.00        |
| Feb-15        | 73.00        |
| Mar-15        | 84.29        |
| <b>Median</b> | <b>81.00</b> |

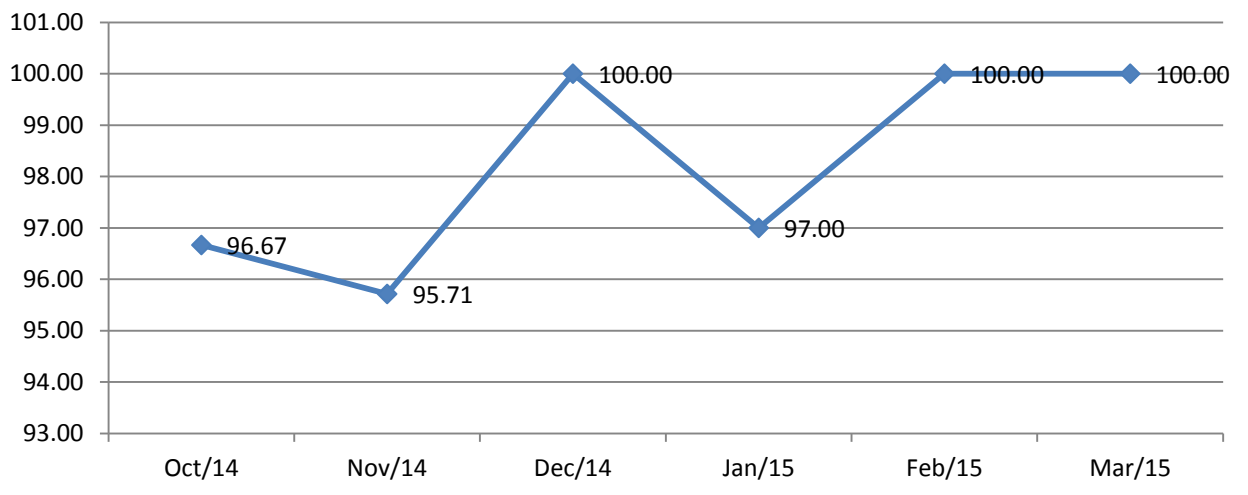
## 5. Housekeeping and food services



## 6. Nursing services

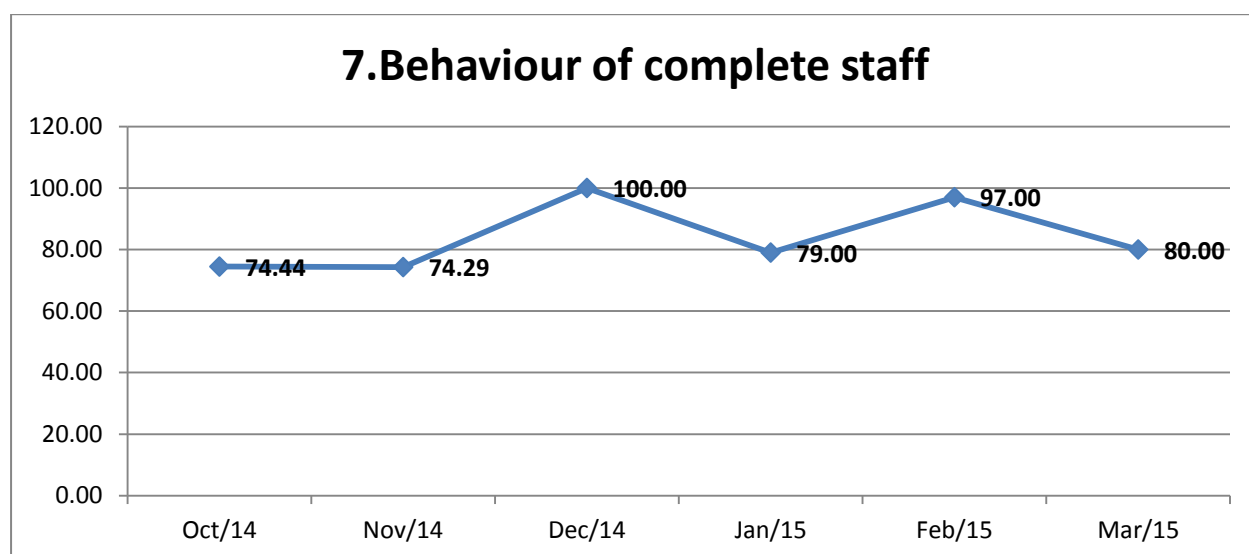
| Month  | Percentage |
|--------|------------|
| Oct-14 | 96.67      |
| Nov-14 | 95.71      |
| Dec-14 | 100.00     |
| Jan-15 | 97.00      |
| Feb-15 | 100.00     |
| Mar-15 | 100.00     |
| Median | 98.50      |

## 6. Nursing services



## 7. Behaviour of complete staff

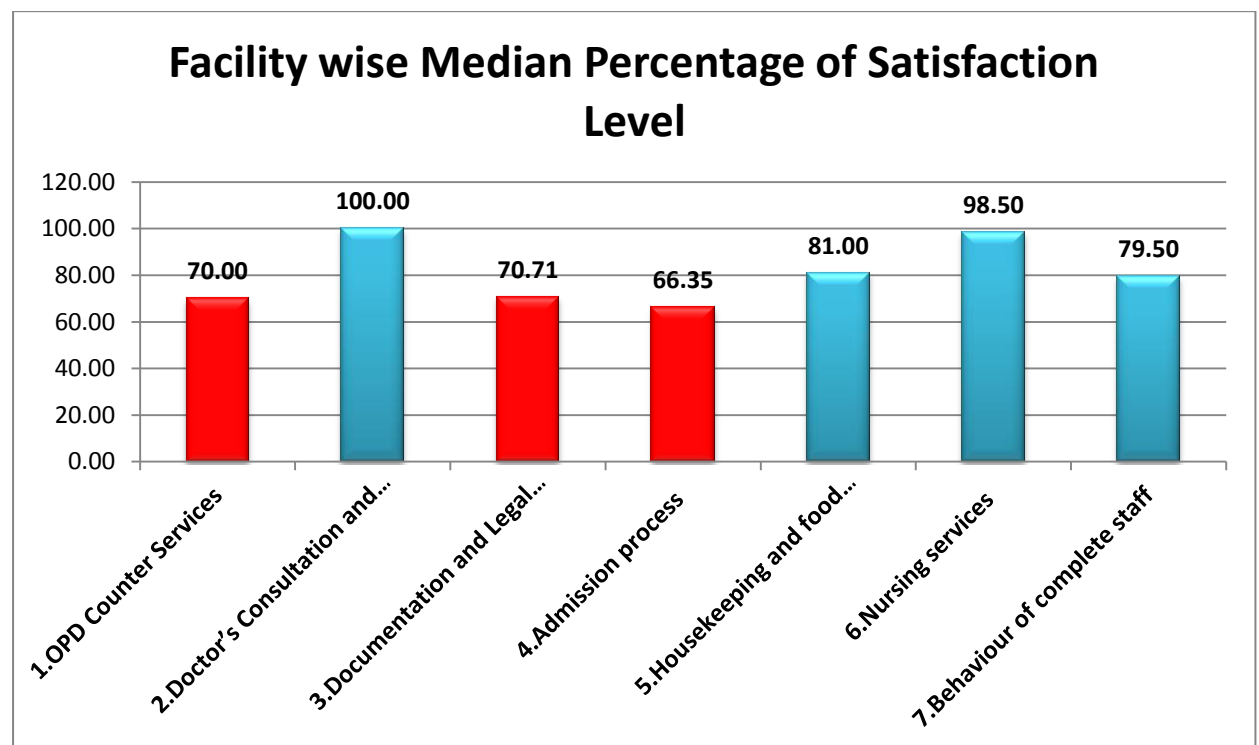
| Month  | Percentage |
|--------|------------|
| Oct-14 | 74.44      |
| Nov-14 | 74.29      |
| Dec-14 | 100.00     |
| Jan-15 | 79.00      |
| Feb-15 | 97.00      |
| Mar-15 | 80.00      |
| Median | 79.50      |



## Complete data for Analysis of Satisfaction Level among Different facilities -

| Facilities/Month                                      | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 | Median |
|-------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|
| 1.OPD Counter Services                                | 65.56  | 67.14  | 70.00  | 70.00  | 73.00  | 75.71  | 70.00  |
| 2.Doctor's Consultation and explanation about disease | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| 3.Documentation and Legal processing                  | 70.00  | 67.14  | 71.43  | 64.00  | 73.00  | 72.86  | 70.71  |
| 4.Admission process                                   | 65.56  | 64.29  | 67.14  | 60.00  | 69.00  | 71.43  | 66.35  |
| 5.Housekeeping and food services                      | 80.00  | 67.14  | 100.00 | 82.00  | 73.00  | 84.29  | 81.00  |
| 6.Nursing services                                    | 96.67  | 95.71  | 100.00 | 97.00  | 100.00 | 100.00 | 98.50  |
| 7.Behaviour of complete staff                         | 74.44  | 74.29  | 100.00 | 79.00  | 97.00  | 80.00  | 79.50  |

The median was calculated for each and every facility. The results showed that there are 3 facilities which are having the median less than 75%. The researcher selected these facilities only for the further research.

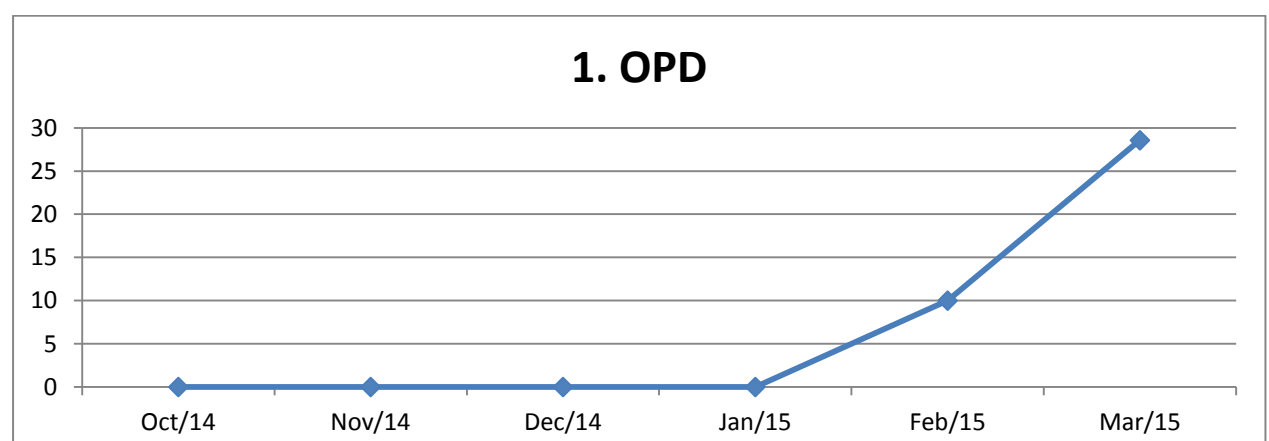


## 2. Analysis of Total Time Taken:-

The patients were asked to mark the procedures in accordance with the total time taken in completion. Below mentioned data is of percentage of patients mentioned the time taken as “**Moderate**”. The responses were taken from the patients who came in the time period of last six months. The month wise response of patients is showed with the help of line charts.

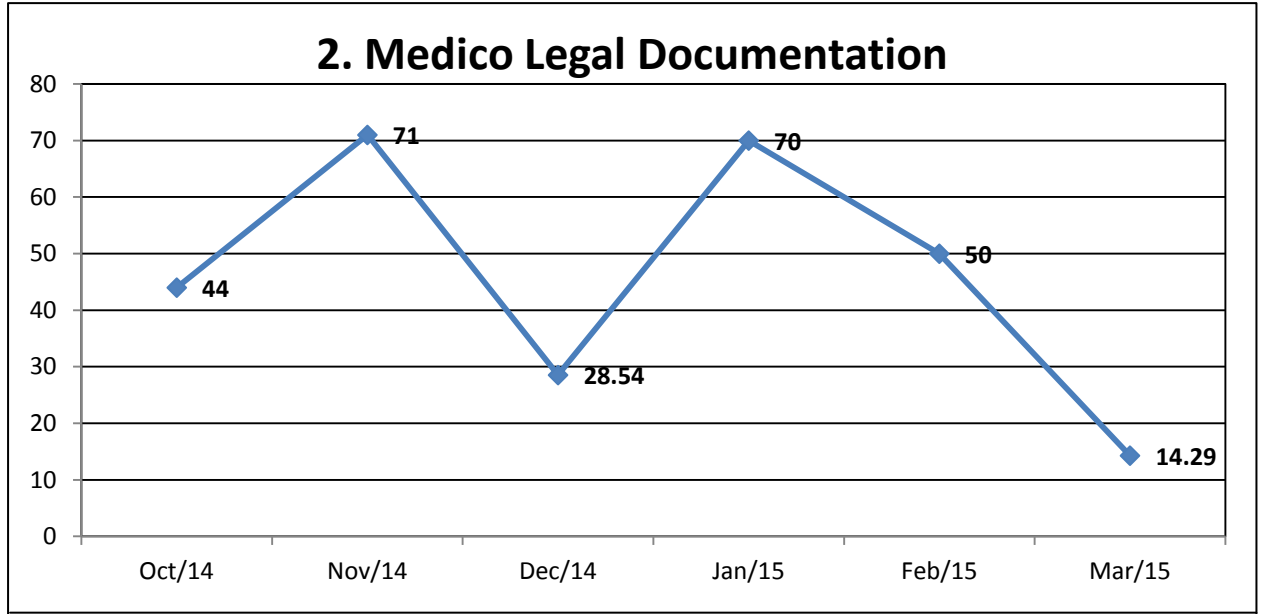
### 1. OPD

| Procedure | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 |
|-----------|--------|--------|--------|--------|--------|--------|
| 1.OPD     | 0      | 0      | 0      | 0      | 10     | 28.57  |



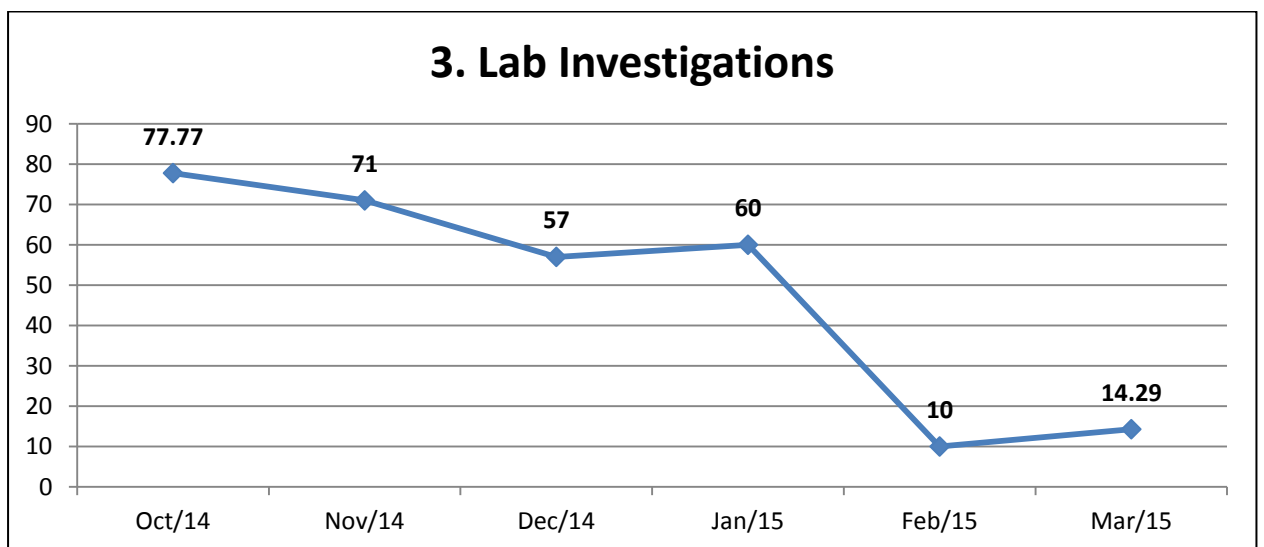
## 2. Medico Legal Documentation

| Procedure                    | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 |
|------------------------------|--------|--------|--------|--------|--------|--------|
| 2.Medico Legal Documentation | 44     | 71     | 28.54  | 70     | 50     | 14.29  |



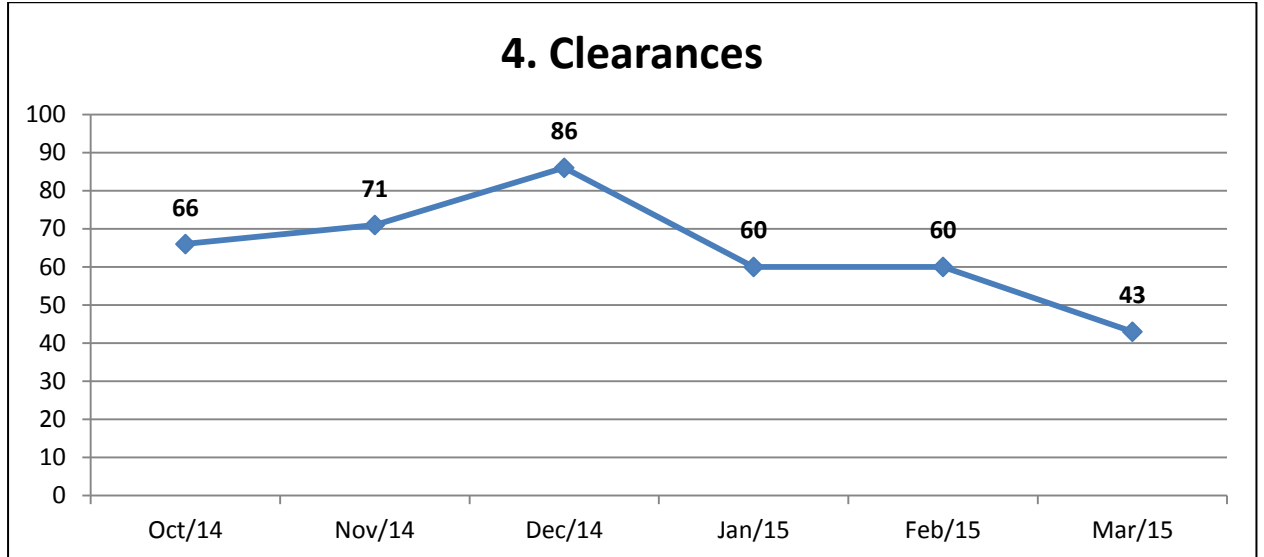
## 3. Lab Investigations

| Procedure            | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 |
|----------------------|--------|--------|--------|--------|--------|--------|
| 3.Lab Investigations | 77.77  | 71     | 57     | 60     | 10     | 14.29  |



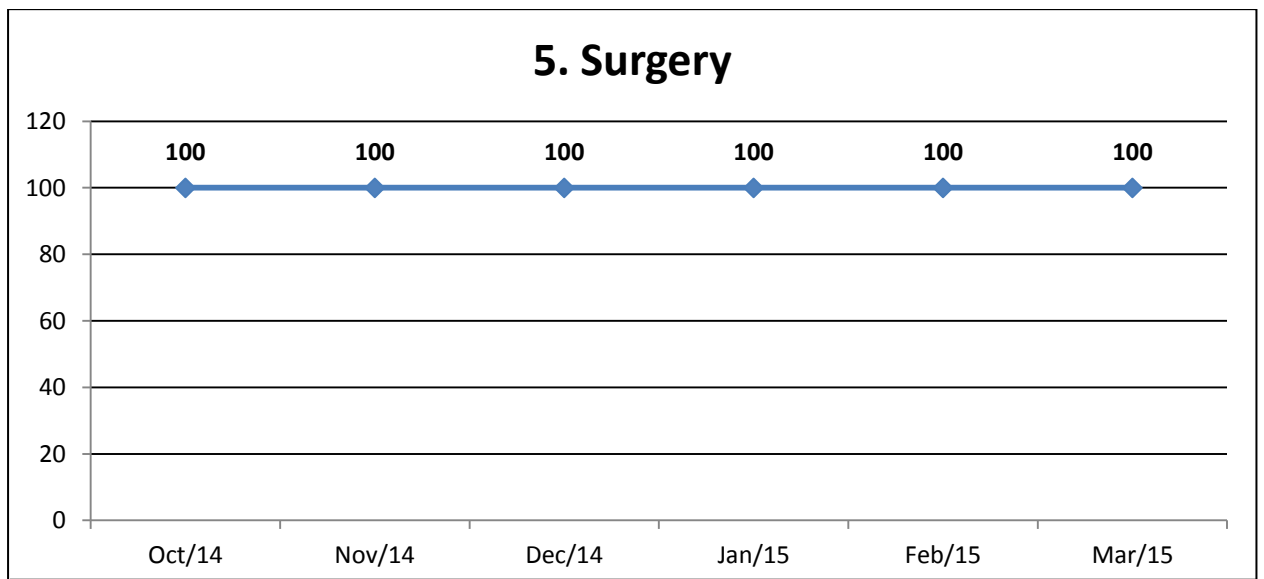
#### 4. Clearances

| Procedure    | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 |
|--------------|--------|--------|--------|--------|--------|--------|
| 4.Clearances | 66     | 71     | 86     | 60     | 60     | 43     |



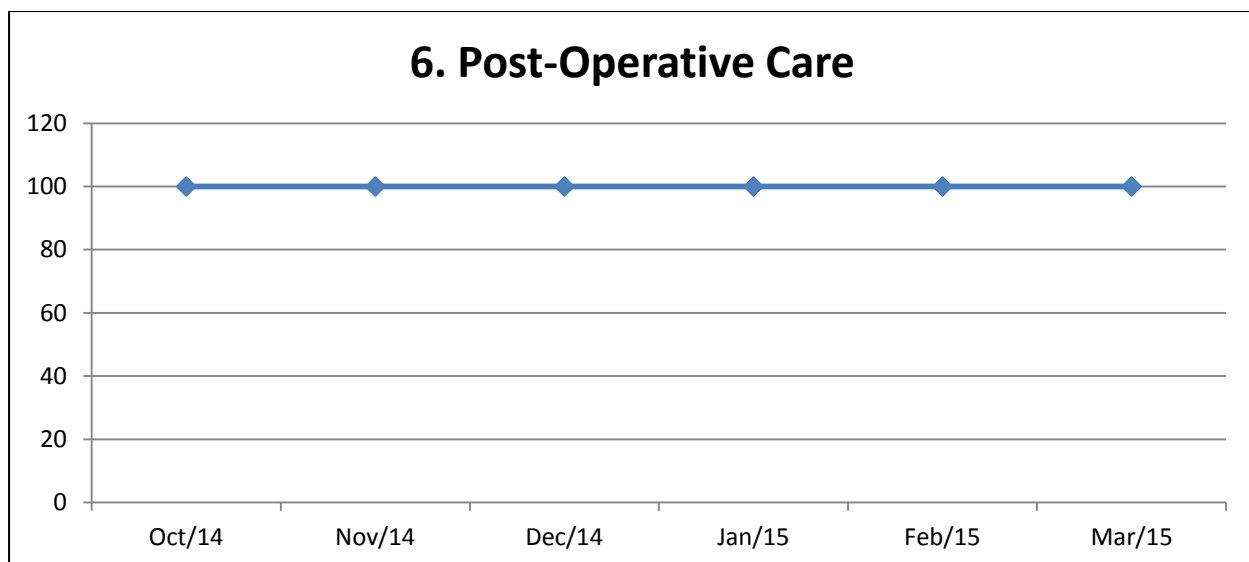
#### 5. Surgery

| Procedure | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 |
|-----------|--------|--------|--------|--------|--------|--------|
| 5.Surgery | 100    | 100    | 100    | 100    | 100    | 100    |



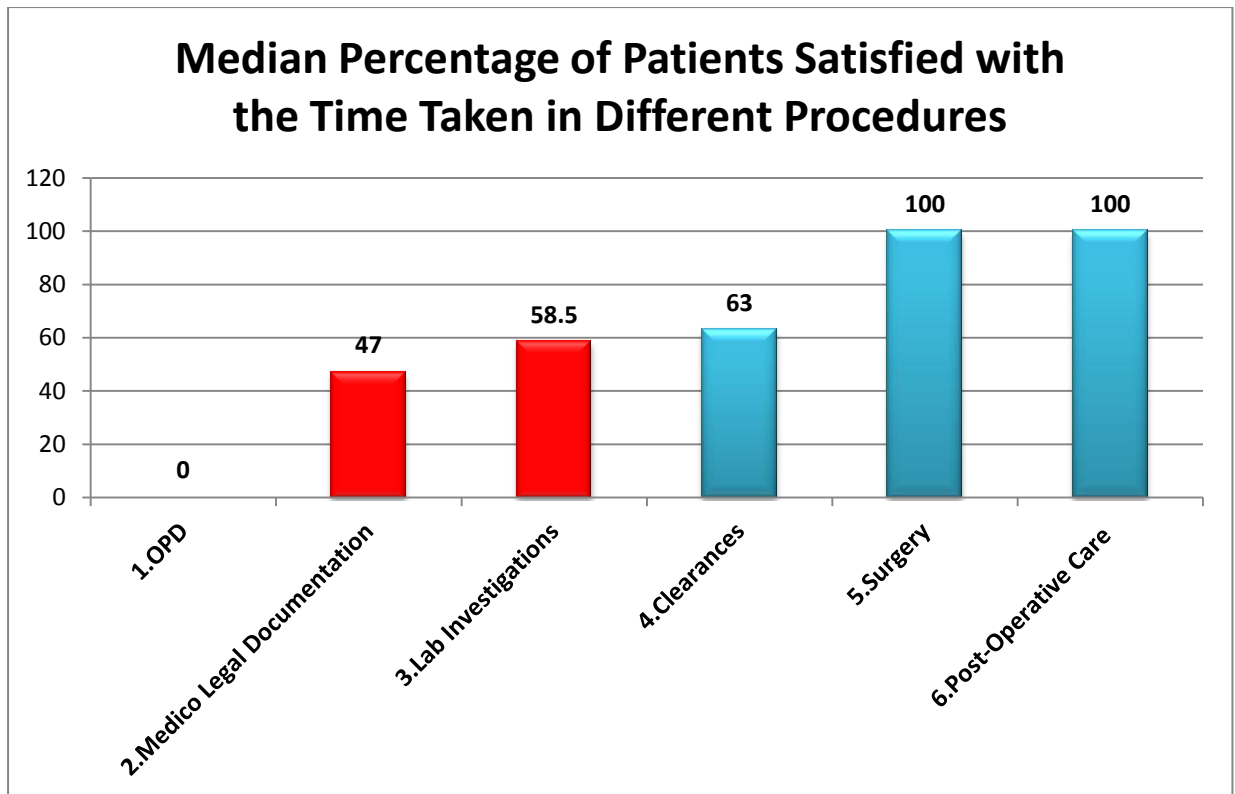
## 6. Post-Operative Care

| Procedure             | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 |
|-----------------------|--------|--------|--------|--------|--------|--------|
| 6.Post-Operative Care | 100    | 100    | 100    | 100    | 100    | 100    |



## Overall Data of Total Time Taken-

| Procedure                    | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 | Median | Average |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|---------|
| 1.OPD                        | 0      | 0      | 0      | 0      | 10     | 28.57  | 0      | 6.43    |
| 2.Medico Legal Documentation | 44     | 71     | 28.54  | 70     | 50     | 14.29  | 47     | 46.31   |
| 3.Lab Investigations         | 77.77  | 71     | 57     | 60     | 10     | 14.29  | 58.5   | 48.34   |
| 4.Clearances                 | 66     | 71     | 86     | 60     | 60     | 43     | 63     | 64.33   |
| 5.Surgery                    | 100    | 100    | 100    | 100    | 100    | 100    | 100    | 100.00  |
| 6.Post-Operative Care        | 100    | 100    | 100    | 100    | 100    | 100    | 100    | 100.00  |



After collecting all the data, the analysis was performed. Researcher took out the average as well as the median of the values. The median is more reliable because the variation in the values is huge. Somewhere it is touching to zero and somewhere it is going beyond 80. So, the median values were taken and a bar graph was plotted. Red coloured bars show the procedures which are having the median values below 60 percent.

Observations:-

The analysis of patients' responses for satisfaction study and time bound analysis states that the areas which need the change most are -

- 1. Out Patient Department of Renal Transplant Unit.**
- 2. Lab Investigation procedure for Renal Transplant**
- 3. Medico Legal Documentation Work for Renal Transplant**

After going through these obtained results an overall process flow of renal transplant was prepared.

The overall process flow is as follows-

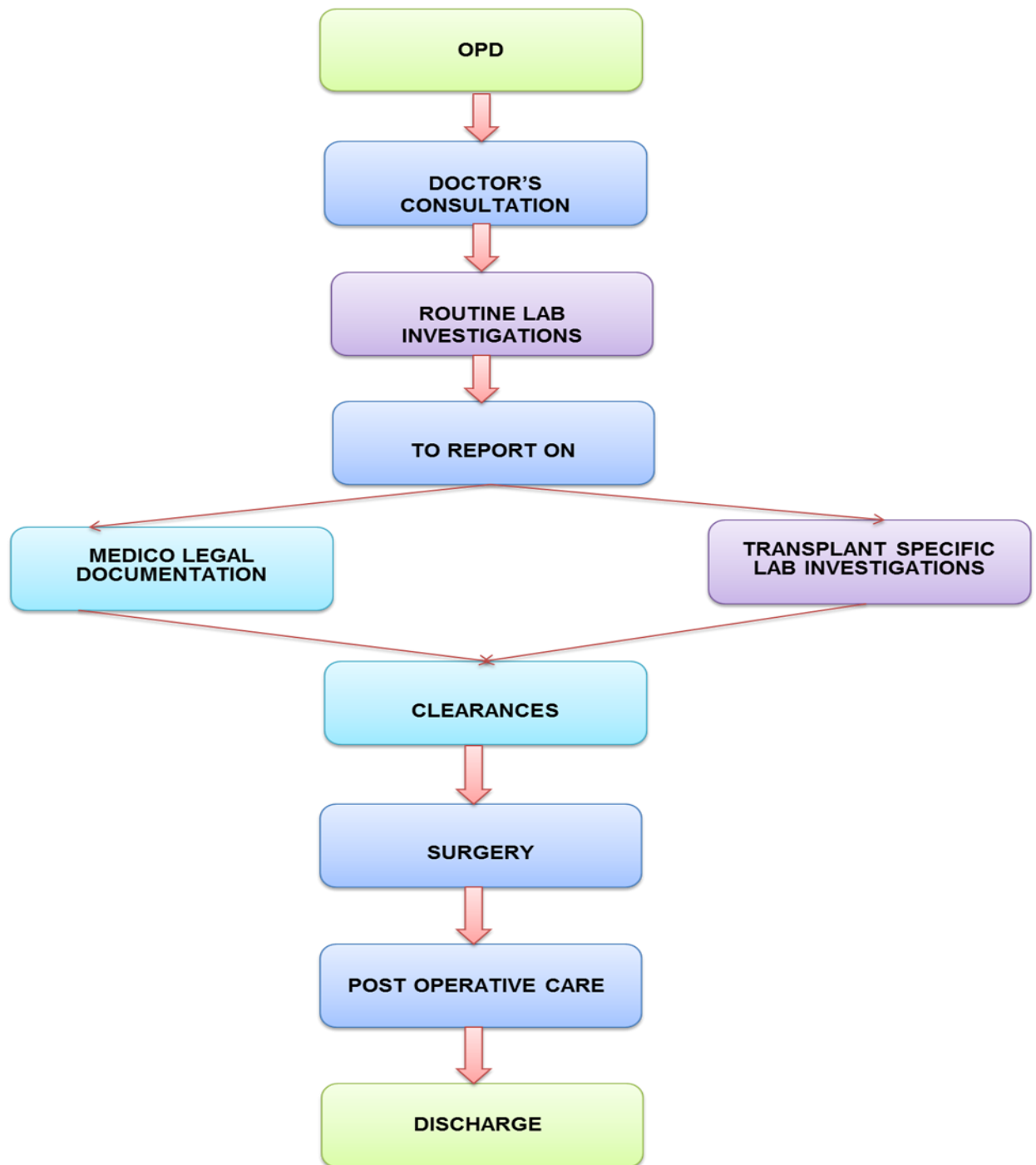
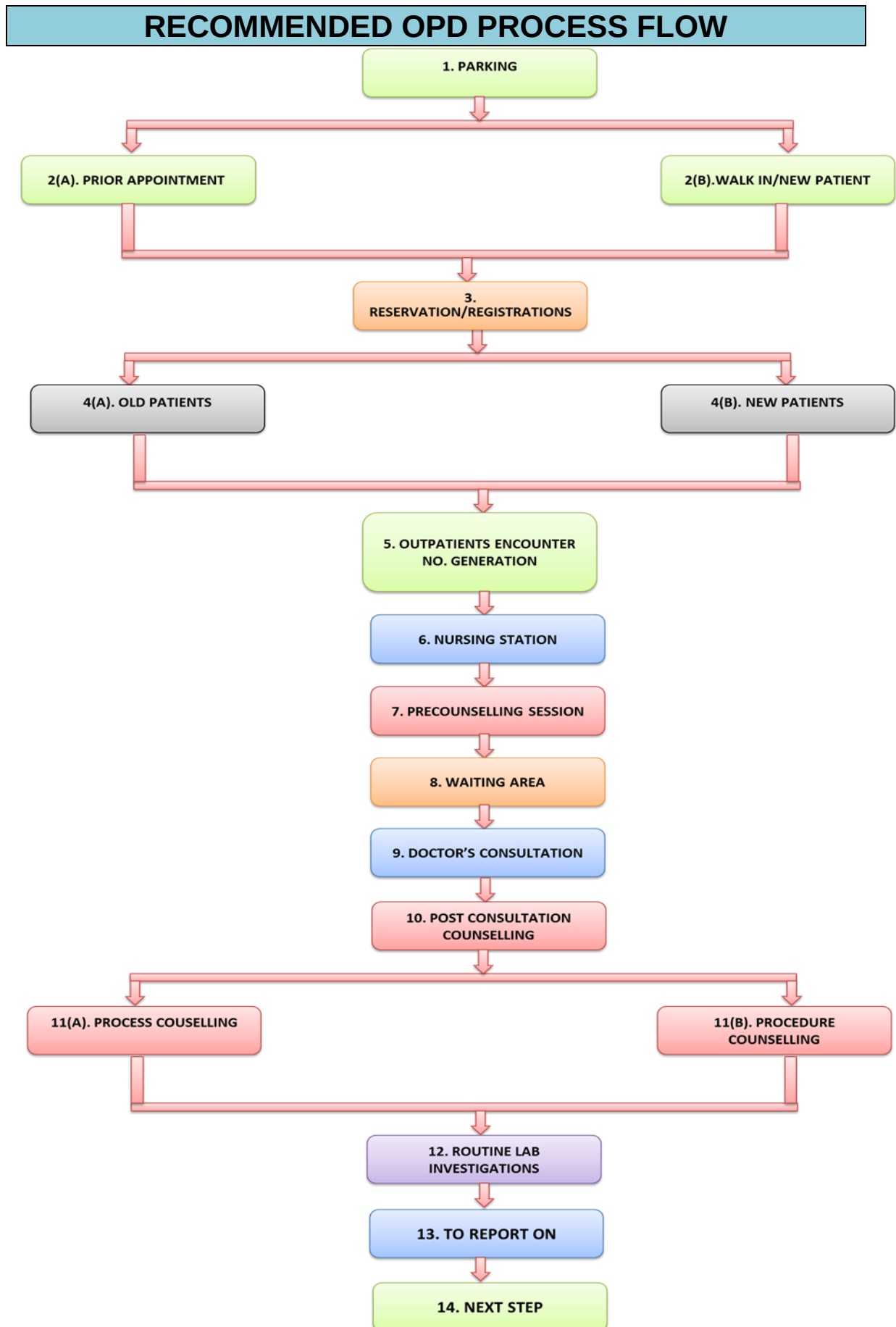


**Figure – The Renal Transplant Process Flow**

The analysis of patients' response is clearly indicating that the satisfaction level among patient for OPD services is quite low and it is also well known main reason behind it is time management. The results show that there almost all the patients said that the time taken in OPD was very high.

So, to increase the efficiency of renal transplant unit the researcher would like to put forward the following process flow for Out Patient Department. This process flow will reduce not only the **total time consumed** but also will increase the **satisfaction** among the patients as well as their relatives.



The reasons for the inclusion of new step –

| New Step | Reason                                                                                                                                                          |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 5   | An encounter number will be generated at the time of billing for all the Out Patients. The patients will be called for further proceedings by this number only. |
| Step 7   | At this step all details from patients will be taken by junior consultant and keep him indulged in some activities until he/she meets the senior consultant.    |
| Step 10  | At this step the patient will be updated about the complete process and procedure of renal transplant.                                                          |

This is the **new and recommended process flow** for the Out Patient department of Renal Transplant unit of MSSH, Saket.

Further discussed areas of concern are –

1. Lab Investigation Procedure
2. Medico Legal Documentation Procedure

Researcher has proposed timeline for lab investigations and medico legal documentation procedure prior to renal transplant surgery which is as follows.

### **PROPOSED TIMELINE FOR LAB INVESTIGATIONS AND MEDICO LEGAL DOCUMENTATION PROCEDURE PRIOR TO RENAL TRANSPLANT SURGERY**

Lab investigations are part and partial process of any transplant surgery. So as for Kidney transplant, we have to take our patient and donor through several Lab investigations. We have divided the Lab investigations into 3 major stages, these stages have been created for the easiness and comfort of patient and donor as well as the attendants.

We have two separate lists of lab investigations for Recipient and Donor; both the lists are having three basic stages. The mentioned stages are basically the steps which are being followed for the Kidney transplant procedure.

Firstly here we are mentioning the list of lab investigations required for Kidney Transplant, we are assigning them a number and according to this number we will make groups of them.

## **RECIPIENT CHECK LIST**

### **Stage – I**

|                                                                           |  |
|---------------------------------------------------------------------------|--|
| 1. Blood Group                                                            |  |
| 2. CBC,ESR, RFT                                                           |  |
| 3. USG whole abdomen                                                      |  |
| 4. Urine – R/M, Urin Spot/cretinine                                       |  |
| 5. Urine C/S                                                              |  |
| 6. PT/INR                                                                 |  |
| 7. APTT                                                                   |  |
| 8. Dialysis Serology Panel (Hcv-IgG, HbsAg, HIV I&II)                     |  |
| 9. SGOT, SGPT, S. Bil, S.Prot/Alb                                         |  |
| 10. ECG                                                                   |  |
| 11. X Ray Chest                                                           |  |
| 12. HCV-RNA (Qualitative)<br>13. Sugar- F-PP- (fasting), HbA1c<br>14. DSA |  |

### **Stage – II**

|                                                               |  |
|---------------------------------------------------------------|--|
| 1. Echo Cardiography / Stress Echo<br>Cardiologists Clearance |  |
| 2. Gyne clearance                                             |  |
| 3. Urology Clearance                                          |  |
| 4. Nephrology clearance                                       |  |
| 5. Gastrology clearance- If Gastro<br>problem                 |  |

### Stage – III

|                                                                                                             |  |
|-------------------------------------------------------------------------------------------------------------|--|
| 1. S.TSH, iPTH, Calcium, Phosphorus, S.iron / feritin / TIBC / (Cholesterol, Triglycerides, LDL – (fasting) |  |
| 2. CMV – IgG + IgM                                                                                          |  |
| 3. EBV – IgG + IgM                                                                                          |  |
| 4. Varicella Zoster – IgG + IgM                                                                             |  |
| 5. HLA DNA Typing- A, B, DR.                                                                                |  |
| 6. HLA- T&B cell cross match                                                                                |  |
| 7. 7. PAC Clearance                                                                                         |  |

### DONOR CHECK LIST

#### Stage – I

|                                                |  |
|------------------------------------------------|--|
| 1. Blood Group                                 |  |
| 2. CBC                                         |  |
| 3. BUN                                         |  |
| 4. S.Creatinine                                |  |
| 5. S – Na <sup>+</sup> , K <sup>+</sup>        |  |
| 6. Sugar – F, PP, HbA1c                        |  |
| 7. TSH                                         |  |
| 8. SGOT, SGPT, S.Bil,                          |  |
| 9. Urine – R/E, Urine protein creatinine ratio |  |
| 10. 24 hrs Urine Protein                       |  |
| 11. PT/INR                                     |  |
| 12. APTT                                       |  |
| 13. CMV-IgG<br>1. -IgM                         |  |
| 14. HbsAG, HVC IgG, HIV I& II                  |  |
| 15. USG abdomen- fasting                       |  |

|                                  |  |
|----------------------------------|--|
| 16. DTPA scan @ nuclear medicine |  |
| 17. ECG                          |  |
| 18. X Ray chest- west block      |  |

### Stage – II

|                                                                                                                  |  |
|------------------------------------------------------------------------------------------------------------------|--|
| 1. S. Cholesterol, (fasting)<br>2. Urine C/S,<br>3. S.Prot/Alb,<br>4. Uric acid,<br>5. PSA (above 50 & in males) |  |
| 6. Calcium, Phosphorus, Alk. phos.                                                                               |  |
| 7. Echo Cardiography                                                                                             |  |
| 8. Gyne Clearance                                                                                                |  |
| 9. HLA DNA Typing- A, B, DR.<br>10. HLA- T&B cell cross match                                                    |  |
| 11. Urology Clearance<br>12. Nephrology clearance                                                                |  |

### Stage – III

|                         |  |
|-------------------------|--|
| 1. CT Renal<br>Angio-   |  |
| 2. Psychiatry Clearance |  |
| 3. PAC                  |  |

The Lab investigation procedure comprises of these following basic steps.

1. Ordering
2. Collection
3. Identification
4. Transportation
5. Preparation
6. Analysis
7. Reporting
8. Interpretation
9. Action

Now we will segregate the Lab investigation steps in various days.

## Test Groups for Recipient –

### Group 1 –

| Group 1 | Tests                                              |
|---------|----------------------------------------------------|
| 1       | Blood Group                                        |
| 2       | CBC,ESR, RFT                                       |
| 3       | PT/INR                                             |
| 4       | APTT                                               |
| 5       | Dialysis Serology Panel (Hcv-IgG, HbsAg, HIV I&II) |
| 6       | HCV-RNA (Qualitative)                              |
| 7       | Sugar- F-PP- (fasting), HbA1c                      |
| 8       | ECG                                                |
| 9       | X Ray Chest                                        |

### Group 2 –

| Group 2 | Tests                             |
|---------|-----------------------------------|
| 1       | SGOT, SGPT, S. Bil, S.Prot/Alb    |
| 2       | Urine – R/M, Urin Spot/creatinine |
| 3       | Urine C/S                         |

### Group 3 –

| Group 3 | Tests |
|---------|-------|
| 1       | DSA   |

### Group 4 –

| Group 4 | Tests                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------|
| 1       | S.TSH, iPTH, Calcium, Phosphorus, S.iron / ferritin / TIBC /(S.Cholesterol, Triglycerides, LDL – (fasting) |
| 2       | CMV – IgG + IgM                                                                                            |
| 3       | EBV – IgG + IgM                                                                                            |
| 4       | Varicella Zoster – IgG + IgM                                                                               |

### Group 5 –

| Group 5 | Tests                     |
|---------|---------------------------|
| 1       | HLA DNA Typing- A, B, DR. |
| 2       | HLA- T&B cell cross match |

## **Procedure for Recipient**

### **Stage 1**

Test Groups – 3

Day 1 For All the groups Ordering, Collection, Identification, Transportation should be done.

Day 1 Preparation & Analysis should be started on the same day for all the groups.

Day 2 Reports of group 1 tests should be made available.

Day 3 After completion of 48 hours reporting of group 2 should be done.

Day 4 After 3 complete days reporting of group 3 tests should be done.

### **Sample Collection –**

Step 1 – Collect Blood samples for tests 1,2,6,7,8,9,12,13,14

Step 2 – Collect urine sample

Step 3 – X-Ray & USG

Step 4 – ECG

Total Time Taken in Stage 1 is 4 Days. We can have one reserve day.

### **Stage 2 Clearances**

Day 1 – Cardio clearances with Prior appointment maximum 90 minutes it will take.

Day 1 – Gynae clearance, if all tests ok then maximum 30 minutes time it will take.

Day 1 – Gastrology Clearance, in case of any gastro disease 15-30 Minutes

Day 1 – Urology clearance, only 15 Minutes required.

Day 1 – Nephrology Clearance, Only 15 Minutes required.

### **Stage 3 Test Groups – 2**

Day 1 – Sample Collection for all the tests of group 4 should be done.

Day 4 – Reporting of all the tests of group 4 should be done.

Day 4 – If all reports are found to be good then immediately go for the PAC.

This above mentioned complete part is of Recipient

### Timeline for Lab Investigations of Recipient:-

| Stage | Group      | Day          | Procedure                                                                                                 | Time taken                                                                          |
|-------|------------|--------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1     | 1, 2, 3    | 1            | Ordering<br>Collection<br>Identification<br>Transportation                                                | 30 Minutes<br>15 Minutes<br>15 Minutes<br>30 Minutes<br><br>Total time = 90 Minutes |
|       |            |              | Preparation & Analysis                                                                                    | Start as soon as the samples come at respective Labs.                               |
|       |            | 2            | Report Collection of Group 1 Tests                                                                        | 20 Minutes                                                                          |
|       |            | 3            | Report collection of Group 2                                                                              | 20 Minutes                                                                          |
|       |            | 4            | Report collection of Group 3 and consultation                                                             | 60 Minutes                                                                          |
|       |            | Total Days-4 |                                                                                                           |                                                                                     |
| 2     | Clearances | 1            | Cardio clearances<br>Gynae clearance<br>Gastrology Clearance<br>Urology Clearance<br>Nephrology Clearance | 90 Minutes<br>15 Minutes<br>15-30 Minutes<br>15 Minutes<br>15 Minutes               |
|       |            | Total Days-1 |                                                                                                           |                                                                                     |
| 3     | 4 & 5      | 1            | Ordering<br>Collection<br>Identification<br>Transportation                                                | 30 Minutes<br>15 Minutes<br>15 Minutes<br>30 Minutes<br><br>Total time = 90 Minutes |
|       |            |              | Preparation & Analysis                                                                                    | Start as soon as the samples come at respective Labs.                               |
|       |            | 4            | Report collection of all the tests of group 4 & 5<br>Consultation                                         | 15 Minutes<br>60 Minutes                                                            |
|       |            | Total Days-4 |                                                                                                           |                                                                                     |

Now we will go through the Lab Investigation Part of the Donor.

## Donor Tests

### Test Groups for Donor

#### Group -1

| Group 1 | Tests                     |
|---------|---------------------------|
| 1       | Blood Group               |
| 2       | CBC                       |
| 3       | BUN                       |
| 4       | Sugar – F, PP, HbA1c      |
| 5       | TSH                       |
| 6       | SGOT, SGPT, S.Bil,        |
| 7       | PT/INR                    |
| 8       | APTT                      |
| 9       | CMV-IgG, -IgM             |
| 10      | HbsAG, HVC IgG, HIV I& II |

#### Group 2 –

| Group 2 | Tests                |
|---------|----------------------|
| 1       | USG abdomen- fasting |
| 2       | DTPA scan            |
| 3       | ECG                  |
| 4       | X Ray chest          |

#### Group 3 –

| Group 2 | Tests                                       |
|---------|---------------------------------------------|
| 1       | S. Creatinine                               |
| 2       | S – Na <sup>+</sup> , K <sup>+</sup>        |
| 3       | Urine – R/E, Urine protein creatinine ratio |
| 4       | 24 hrs Urine Protein                        |

## **Procedure for Donor**

### **Stage 1** Total Group - 3

Day 1 – For all the groups Ordering, Collection, Identification, Transportation should be done.

Day 1 – Preparation & Analysis should be started on the same day for all the groups.

Day 2 – Reports of tests of group 1 & 2 should be made available.

Day 3 – Reports of group 3 tests should be made available.

### **Stage 2**

Day 1 – Ordering, Collection, Identification, Transportation should be done for group 4, 5 & 6

Day 1 – Preparation & Analysis should be started on the same day for all the groups.

Day 4 – Reports of all the tests of group 4, 5 & 6 should be made available

Day 4 – After receiving the reports immediately try to go for all the clearances.

### **Stage 3**

Day 1 CT Renal Angio

Day 1 Psychiatry Clearance

Day 2 Report collection & PAC\

## Timeline for Lab Investigations of Donor:-

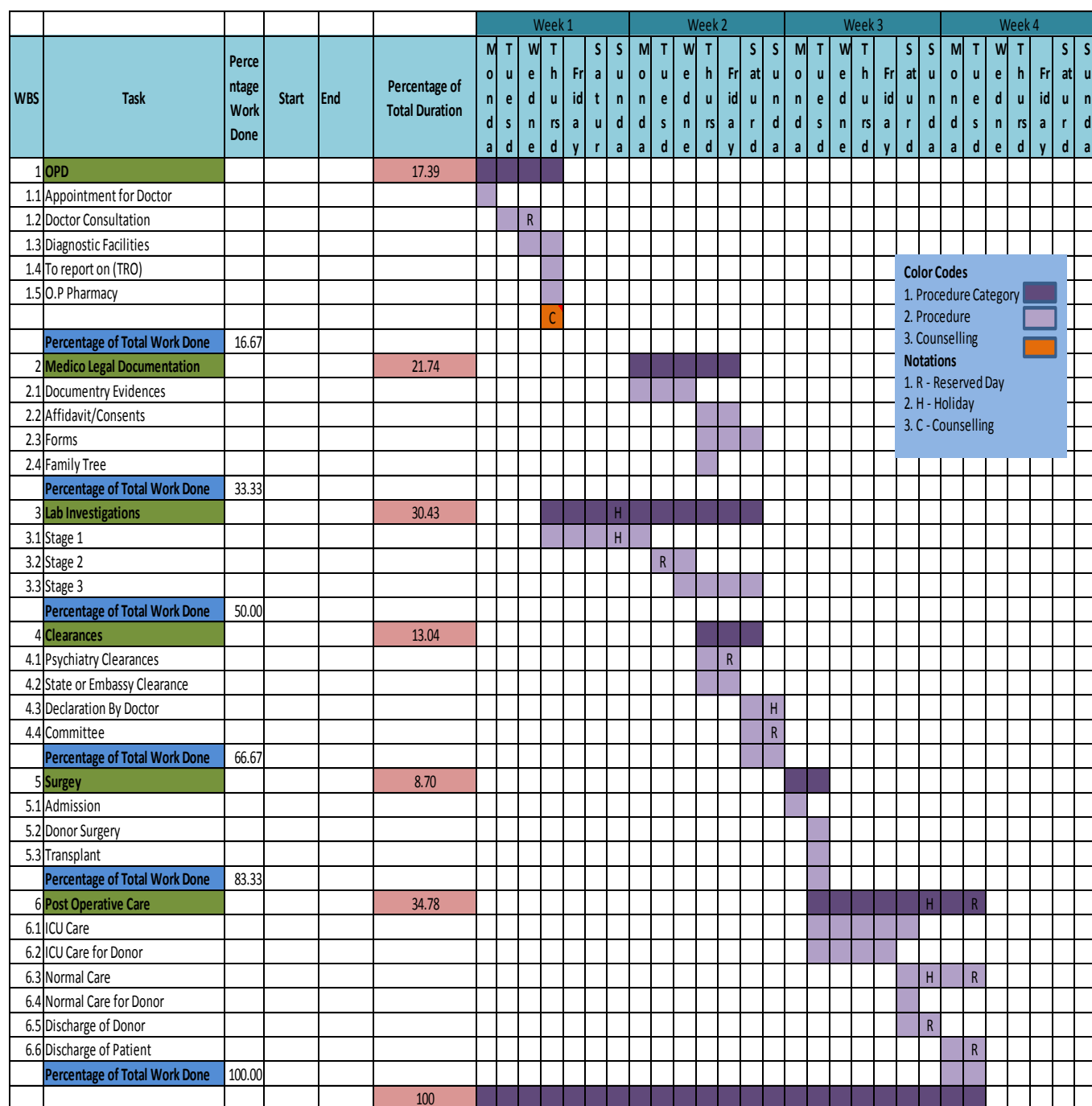
| Stage    | Group                 | Day          | Procedure                                                  | Time taken                                                                      |
|----------|-----------------------|--------------|------------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>1</b> | 1, 2, 3               | 1            | Ordering<br>Collection<br>Identification<br>Transportation | 30 Minutes<br>15 Minutes<br>15 Minutes<br>30 Minutes<br>Total time = 90 Minutes |
|          |                       |              | Preparation & Analysis                                     | Start as soon as the samples come at respective Labs.                           |
|          |                       | 2            | Report Collection of Group 1 & 2 Tests                     | 20 Minutes                                                                      |
|          |                       | 4            | Report collection of Group 3 and consultation              | 60 Minutes                                                                      |
|          |                       | Total Days-4 |                                                            |                                                                                 |
| <b>2</b> | 4, 5, 6               | 1            | Ordering<br>Collection<br>Identification<br>Transportation | 30 Minutes<br>15 Minutes<br>15 Minutes<br>30 Minutes<br>Total time = 90 Minutes |
|          |                       |              | Preparation & Analysis                                     | Start as soon as the samples come at respective Labs.                           |
|          |                       | 4            | Report collection of all the tests of group 4,5 & 6        | 15 Minutes                                                                      |
|          | Clearances            |              | Gather all the required clearances on this day only        | 120 Minutes                                                                     |
|          |                       | Total Days-4 |                                                            |                                                                                 |
| <b>3</b> | CT Renal Angio        | 1            | Go for CT Renal Angio                                      | 60 Minutes                                                                      |
|          | Psychiatric clearance |              | Get the psychiatric clearance                              | 90 Minutes                                                                      |
|          |                       | 2            | Collect the reports of CT Renal Angio and get the PAC done | 90 Minutes                                                                      |
|          |                       | Total Days-2 |                                                            |                                                                                 |

## Timeline and Grouping of Medico Legal Documentation Procedure Prior to Renal Transplant

| Group 1 | Document type           | Particular           | Day | Procedure                                                                                                                          | Time      |
|---------|-------------------------|----------------------|-----|------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1.      | Documentary Evidences   | Donor                | 1   | Collect all the documentary evidences like Address proofs, document showing past acquaintances, Identity proofs for all the three. | 3 Hours   |
|         |                         | Recipient            |     |                                                                                                                                    |           |
|         |                         | Donor close relative |     |                                                                                                                                    |           |
| 2.      | Affidavits and consents | Donor                | 2   | Create and collect all the Affidavits/consents from everyone be it Recipient, Donor or Donor close relative                        | 4-5 Hours |
|         |                         | Recipient            |     |                                                                                                                                    |           |
|         |                         | Donor close relative |     |                                                                                                                                    |           |
| 3.      | Forms                   | Donor                | 1   | Fill all the forms as per the need and criteria.                                                                                   | 4-5 Hours |
|         |                         | Recipient            |     |                                                                                                                                    |           |
|         |                         | Donor close relative |     |                                                                                                                                    |           |
| 4.      | Family Tree             | All                  | 1   | Provide all the information necessary to form a Family Tree                                                                        | 1 Hour    |

**Note** – Transplant Committees both internal as well as external are held to check the authenticity of transplant case.

The suggested Gantt chart for the Complete Renal Transplant Procedure is as follows-



## CONCLUSIONS:

Thus the Renal Sciences Department is performing the pre-transplant procedures with **waiting period** as its main disadvantage. Waiting period includes all lab investigations and medico legal document completion.

**Patient Satisfaction Survey** of domestic patients for Renal Transplant helps to estimate this disadvantage of waiting period.

**Currently**, all the procedures at MSSH, Saket is human centred with less I.T interventions and no Tracker systems. Coordinators are assigned with multiple tasks starting from giving the estimates till counselling sessions. Lot of time is wasted to explain the procedure and completion of file. It also undergoes repetition of steps due to errors. This leads to increase of waiting period and delay in procedure which results in Patient Dissatisfaction.

Thus, with this **Operational Efficiency Model** streamlining of pre renal transplant is done and waiting period is reduced. For this, I.T interventions and proper following and tracking system is needed. This will indirectly increase patient satisfaction and efficiency of the department can be accurately measured.

## Overall Recommendations besides timeline:-

1. Proper Slot division should be there for Doctor Consultation during OPD.
2. In time intimation of timings to the patients by messages.
3. Perfect Co-ordination required between staff members of Renal Transplant Unit.
4. Separate time slot for patients showing the reports only.
5. Token Number system should be introduced as soon as possible to overcome the problems faced during the Out Patient Care.
6. IT intervention is required for the token number generation and on time execution of the proposed method.
7. Follow the above mentioned timeline for Lab investigations and medico legal documentations.

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6. John Hopkins University report on kidney transplantation.
7. David Petechuk (2006), *Organ transplantation*, Greenwood Publishing Group.
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## PROJECT REPORT 2:

### TITLE:

# MARKETING STRATEGIC MODEL OF REVENUE ESCALATION FOR MEDICAL TOURISM AT MAX SUPER SPECIALITY HOSPITAL, SAKET, NEW DELHI.

### INTRODUCTION/BACKGROUND:

Healthcare Industry globally is changing rapidly and becoming more complex, particularly in developing nations. Initially, patients follow their traditional method of visiting to their respective hospitals at their nearby localities. Here, healthcare providers had operated as **semi-monopolies** with an unlimited flow of customers and guaranteed revenues. Now, customers have greater choices and this had led to more competition.

Healthcare services are being offered through a **Retail Oriented Marketing Model** and they have to market their services to increasingly discriminating customers.

This healthcare consumerism has boosted “Medical Tourism” concept worldwide which is very popular these days.

**Medical tourism**, also called **medical travel** or **health tourism** is a term initially coined by travel agencies and the mass media to describe the rapidly-growing practice of travelling to another country to obtain healthcare.

Various Asian countries like Thailand, Malaysia, Singapore, India, etc. are promoting medical tourism aggressively.

**Medical value travel** is the term that has been chosen to refer to the practices or trends of patients seeking healthcare beyond boundaries. The keyword taken is ‘value’ since a patient seeks value when they choose to undertake travel for healthcare. The term value is also of importance in this context since the practice of medical tourism adds and generates value for the country under consideration.

MAX Super Speciality Hospital, Saket, New Delhi is one of the leading Healthcare providers offering Medical Tourism in Delhi-NCR region.

**Key words:** Healthcare, Private players, Traditional, Medical Tourism, Revenue Escalation

### REVIEW OF LITERATURE:

1. Medical tourism or health care tourism is fast growing multibillion-dollar industry around the world. It is an economic activity that entails trade in services and represents the mixing of two of the largest world industries: **Medicine and Tourism**.

2. Whereas tourism has slumped during recession, Medical Tourism remained unaffected as patients in developed countries realised that they can avoid paying high medical costs in their home countries.
3. **Reasons for Medical tourism :**
  - a. Much cheaper rates or those treatments such as Ayurveda or yoga therapies and allopathy which are not available in one's own country. Such services typically include elective procedures as well as complex specialised surgeries such as joint replacement (knee/hip), cardiac, urology and transplant of major organs, dental or cosmetic surgeries.
  - b. Availability of latest technologies and growing compliance on international standards.
  - c. Less visa restrictions and language barriers in India
  - d. Leisure aspects typically associated with travel and tourism are also included in such medical travel trips.
4. India has a **2% share** of the global health tourism market. According to provisional statistics 6.29 million foreign tourists arrived in India in 2011 (An increase of 8.9% from 2010) and in 2012 there is an increase of 16.2 % from 2011.
5. According to a study carried under the **Confederation of Indian Industry (CII)**, medical tourism in India is projected to become a US \$2.3 billion industry with an annual growth rate of 30% in 2012 from 12% (2002). India's medical tourism selling slogan "**First World Treatment at Third world Prices**" is very effective and popular campaign in all over the world. Delhi/NCR has emerged as a perfect destination for medical tourism in India. The government as well as private players are keenly assessing the potential and means to tap the same. Many private players established high-tech hospitals and are providing health care facilities; which matches the highest standards of healthcare delivery worldwide.
6. In India, **Delhi NCR and Chennai** are two primary hubs for quality based Medical Tourism and Chennai is considered as India's Health Capital.

## OBJECTIVES:

- a. **General Objective:** To formulate the marketing strategic model of revenue escalation for medical tourism at MSSH, Saket, New Delhi.
- b. **Specific Objective:** To assess and review the revenue generation and to provide an optimization model for higher revenues and streamlining of operational procedures at MSSH, Saket, New Delhi.

## RATIONALE/ NEED:

1. Healthcare services across the globe vary significantly. Unavailability of quality healthcare in many countries across the world creates the need to look beyond the. There is often disparity across countries in the socio economic conditions where despite the paying capacity; patients may not be able to access quality healthcare, simply due to the lack of availability. Many African countries, South American countries, and even the Middle East nations fall under this category.

2. In developed countries, medical tourism often provides an alternate way for uninsured or underinsured patients to obtain economical treatment. It can help bring down the waiting period significantly and help provide treatment to patients who require urgent medical care. Growth of medical tourism is likely to promote the expansion and modernisation of health facilities in developing countries. Medical tourists can access specific procedures like complex surgeries, specialised treatments for chronic diseases, and other methods of focussed care.
3. There are surgeries and procedures that are not covered under the insurance ambit, for instance, cosmetic surgeries and dental treatments. Medical tourism offers a viable option in such cases too. With growing concerns of rising medical costs, aging population, increase in lifestyle related diseases, coupled with factors such as increasing healthcare awareness among people, medical tourism can help reduce the burden of disease considerably and help people receive the timely and appropriate care they need.
4. In 2005 there were only 2 JCI accredited hospitals present in India, where this number has radically changed to 23 in 2015.

## METHODOLOGY:

The population of MSSH Saket was sorted out of Max Saket and Max Shalimar Bag data of last fiscal year i.e. from April 2014 to March 2015. In every month the population was around 450 to 520, so the **total population size analysed is 5139**. The project primarily focussed on the **Inpatient department** and have analysed the data of the same.

For analysis we have followed the following **steps:-**

1. First the country wise revenue was calculated and data was arranged in descending order. Out of it, top 10 revenue generating countries were selected
2. Then the country wise total number of patients in descending order was calculated. Out of it we selected the top 10 countries. Total Number of International Inpatient treated in MSSH, Saket is 5139.
3. Then the monthly total revenue generation and total number of patients were calculated.
4. After this an analysis to get the speciality wise number of patients and revenue were performed.
5. The percentage share of each speciality in the total revenue was calculated.
6. Then the top 7 specialities and their share in total revenue were drawn.
7. Countries which provide the maximum share for medical tourism in India were selected. Then the global burdens of disease of these shortlisted countries based on the WHO reports were carried out.
8. Then a comparison was drawn between our super specialities and the global burdens of disease of these countries.
9. SWOT analysis was done on the gathered data.
10. Now strategies were formed for these countries which were the part of opportunity.

## DISCUSSION:

1. The study proceeds from estimating the total number of foreign tourist arrivals in India.



2. Out of it, the total foreign tourist arrivals for medical treatment is estimated in India. It helps to estimate the scope of medical tourism and further its future possibilities.



**Total Foreign Tourist Arrivals (FTA) vs FTAs for medical treatment in India**



Source: 'India tourism statistics 2012', Ministry of Tourism website, accessed 25 July 2014

#### KEY FINDINGS:-

- In 2012, **U.S and UK** were responsible for the highest number of FTAs in India.
- However, the number of FTAs for medical treatment from these two countries was significantly less, at **3.4 percent** of the total medical FTAs.
- **Bangladesh** and other neighbouring underdeveloped countries on the other hand were responsible for approximately 50 percent of the total number of medical tourists.



3. Out of the total pool, top 10 source countries of FTAs in India are estimated. This helps to target the top most revenue generating countries and helps to form the new market for the countries having least revenues.

**Top 10 source countries of FTAs in India, 2012**



Source: 'India tourism statistics 2012', Ministry of Tourism website, accessed 25 July 2014

#### KEY FINDINGS:-

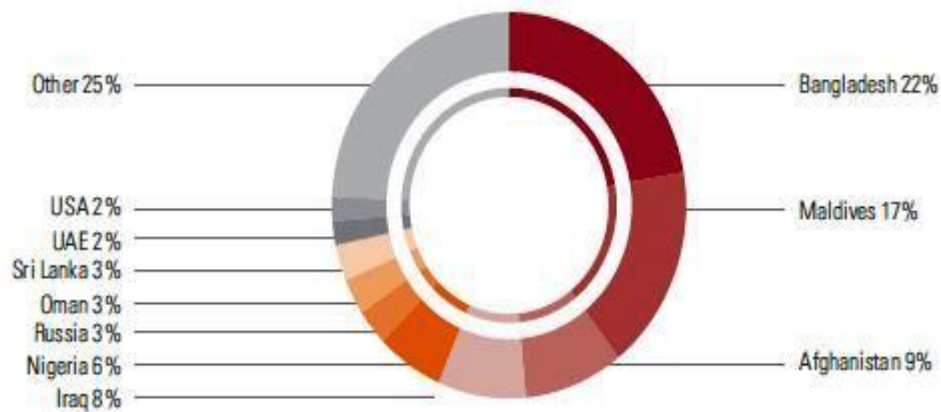
- **Bangladesh** accounts for the highest number of medical tourists owing to the lack of quality healthcare infrastructure and unavailability of skilled manpower in their country. Moreover, India is a convenient option because of its physical proximity and similarity in culture, food and language.
- **SAARC countries** in particular (namely Afghanistan, Pakistan, Nepal, Bhutan, Bangladesh, Maldives and Sri Lanka) are a major source of medical tourists owing to the physical proximity and political co-operation agreements.
- The SAARC countries have been an important source of medical tourists for India. Factors like proximity, direct air connectivity, and cultural connect help establish India as a preferred destination for medical tourism for patients from the region.
- With regional cooperation treaties in place, there is a mutual consent between these countries to promote each other as medical tourism destinations in a symbiotic fashion. For instance, **Maldives** has recently suggested that medical tourists coming to India for their treatment should be encouraged to travel to Maldives for rejuvenation purposes.



4. Top 10 countries are shortlisted and their nationality wise breakups of FTAs for Medical treatment are selected. This helps to compare the revenue generating countries of Max Hospital Saket with the overall National breakups. It thereby

helps in focusing the countries which are not coming to MSSH, Saket but are contributing to overall revenue for medical tourism in India. It helps to focus on **NEW MARKET** formation.

#### Nationality wise break-up of FTAs for medical treatment purpose in India, 2012



Source: 'Indian Healthcare Services', J.P. Morgan Asia Pacific Equity Research, 12 March 14

\*Note: Country wise share adds up to 99%

#### KEY FINDINGS:

- The nationality wise break ups for top 10 countries estimated that Bangladesh contributes to the maximum amount. Maldives, Afghanistan, Iraq, Nigeria, Russia, Sri Lanka follow Bangladesh. Thus, these are the Marketing targets for Medical Tourism in India.
- **The leading destinations** of medical tourism in the country are **Andhra Pradesh, Karnataka, New Delhi, Kerala, Tamil Nadu, and Maharashtra**.
- Due to the establishment of some of the earliest medical schools in the southern states of India, healthcare infrastructure available here is of high standards.
- This also resulted in the creation of a pool of clinical schools and entrepreneurial skills made available to the medical tourism industry to help facilitate growth at a faster pace than the rest of the states.



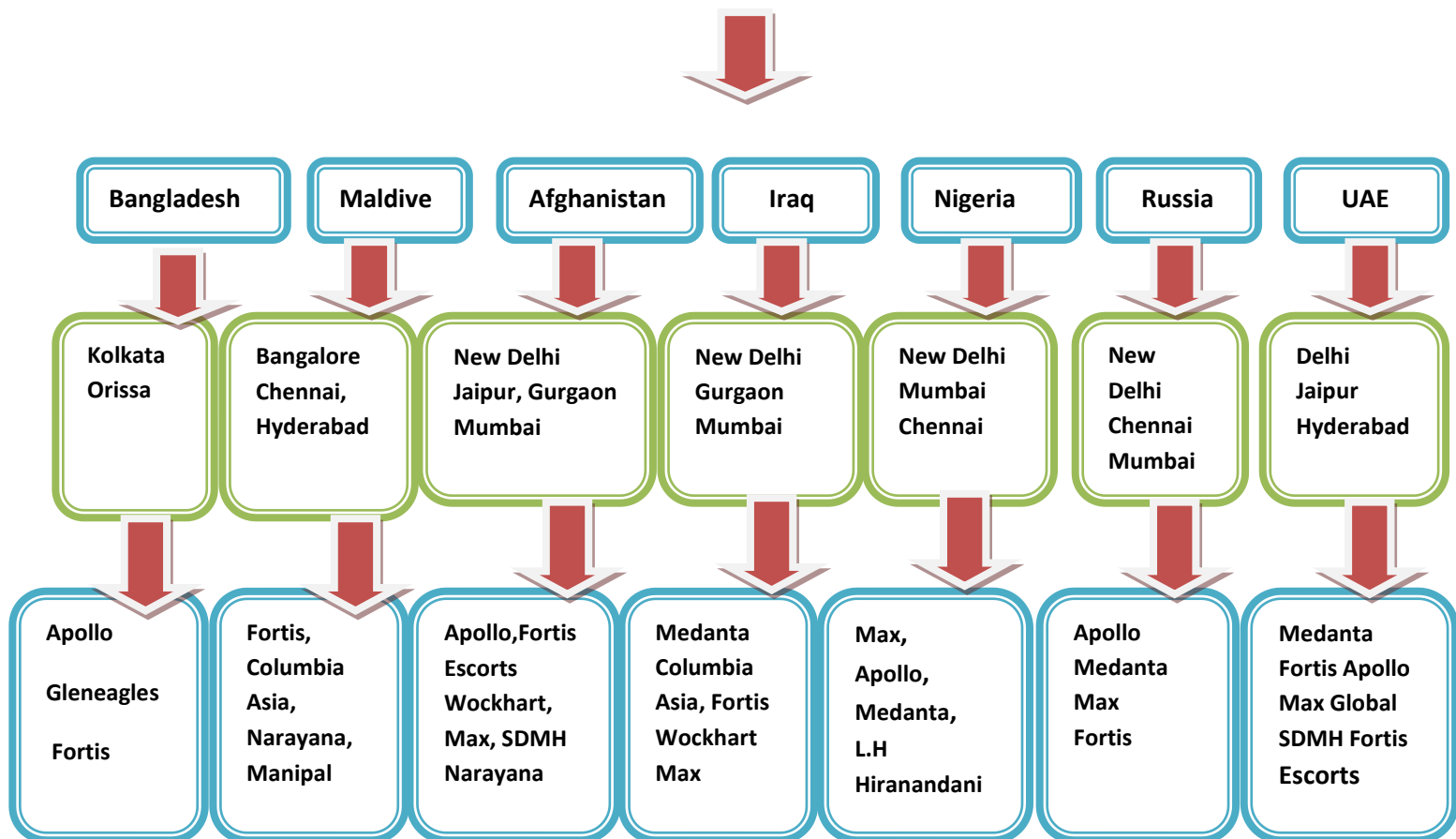
5. **Marketing strategy** begins with identifying the target market followed by the need and the primary focusing area i.e. BURDEN OF DISEASE (BOD). BOD helps to compare the top specialities of MSSH, Saket and its complementary countries. It also helps to evolve various Branding and Marketing strategies for promoting MSSH, Saket's specialities to this New Market.

**Top 7 nationality wise countries for Medical Tourism with their Burden of Diseases:-**

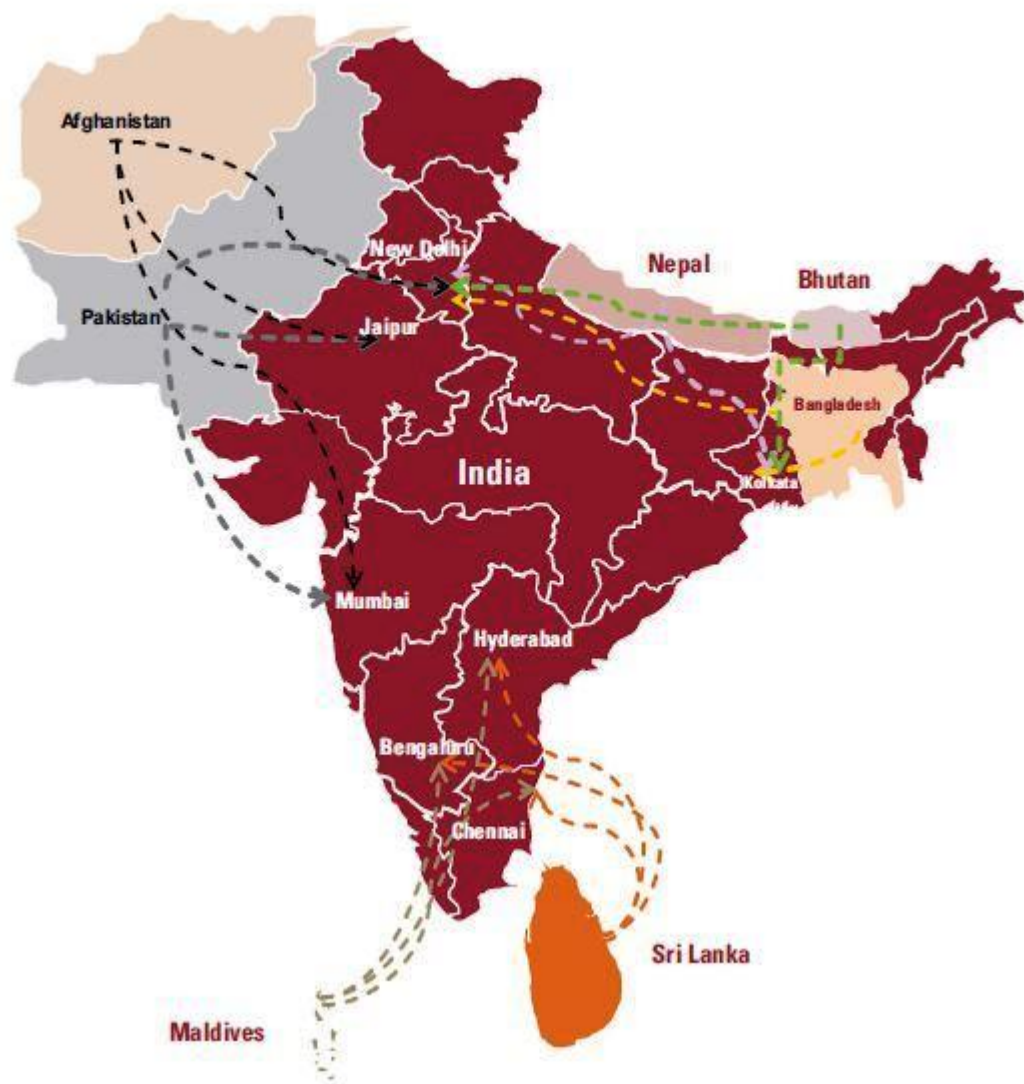
| <b>COUNTRIES</b> | <b>BURDEN OF DISEASES</b>                                                                                                             |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 1.Bangladesh     | Cardiovascular disorders, Neuropsychiatric disorders, Cancers, Renal Sciences Disorders, General Surgeries, Musculoskeletal disorders |
| 2.Maldives       | Neuropsychiatric disorders, Cancers, Cardiovascular disorders, Orthopaedic disorders                                                  |
| 3.Afghanistan    | Cancers, Renal Sciences Disorders, General Surgeries, Musculoskeletal disorders, Cardiovascular disorders, Paediatric surgeries       |
| 4.Iraq           | Cardiovascular disorders, Cancers, Neuropsychiatric disorders, Orthopaedic disorders                                                  |
| 5.Nigeria        | General surgeries, Kidney disorders, Cancers, Orthopaedic disorders, Cardiovascular disorders                                         |
| 6.Russia         | Cardiovascular disorders, Cancers, Orthopaedic disorders                                                                              |
| 7.UAE            | Cardiovascular disorders, Neuropsychiatric disorders, Pulmonary disorders, Bariatric surgeries                                        |

**COMPITITORS AND ALTERNATIVE DESTINATIONS FOR MEDICAL TOURISM BESIDES MSSH, SAKET, COUNTRYWISE:**

**MEDICAL TOURISTS' BREAKUP:**



## PASSAGE AND SAARC COUNTRIES DISTRIBUTION IN INDIA :



### KEY FINDINGS:

- The **leading destinations** of medical tourism in the country are **Andhra Pradesh, Karnataka, New Delhi, Kerala, Tamil Nadu, and Maharashtra**.
- Due to the establishment of some of the earliest medical schools in the southern states of India, healthcare infrastructure available here is of high standards.
- This also resulted in the creation of a pool of clinical schools and entrepreneurial skills made available to the medical tourism industry to help facilitate growth at a faster pace than the rest of the states.

## ANALYSIS:

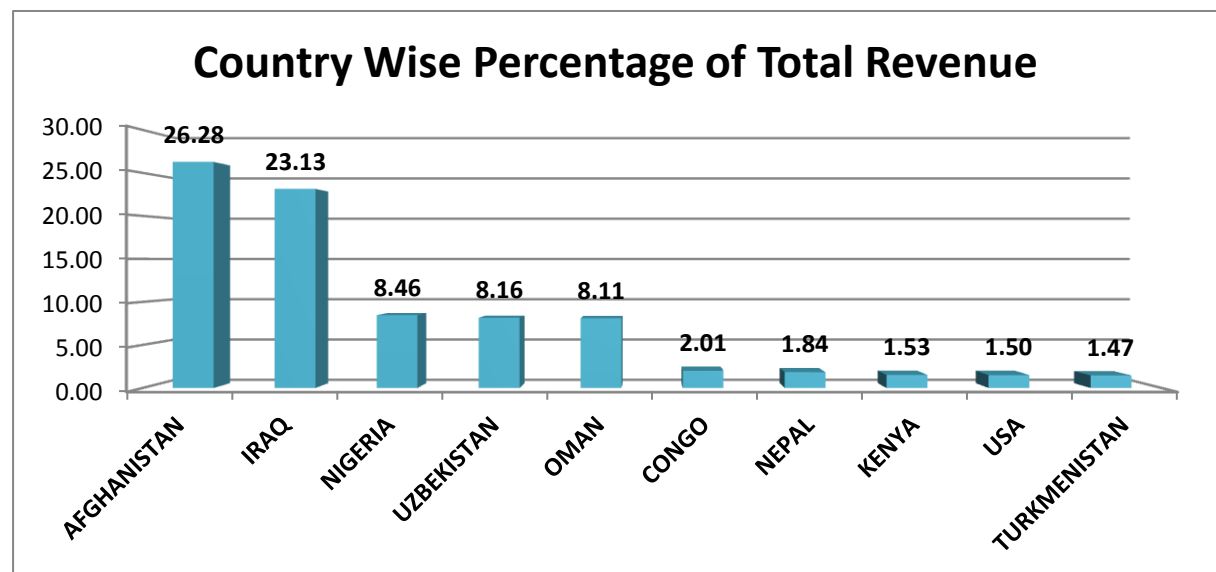
The MSSH, Saket is a leading provider for medical tourism in Delhi NCR region the average revenue generated by International Patient Services Department ranges between 8-10 crores monthly.

We have analysed the data of MSSH Saket only out of Pan Max data of last fiscal year i.e. from April 2014 to March 2015. We primarily focussed on the Inpatient department and have analysed the data of the same. According to methodology the following steps were carried out.

### Step 1:-

#### Top 10 Revenue Generating Countries-

| Country      | Total Country wise revenue | Percentage of Total Revenue |
|--------------|----------------------------|-----------------------------|
| AFGHANISTAN  | 26,32,05,502               | 26.28                       |
| IRAQ         | 23,16,98,563               | 23.13                       |
| NIGERIA      | 8,47,50,971                | 8.46                        |
| UZBEKISTAN   | 8,17,43,556                | 8.16                        |
| OMAN         | 8,12,51,044                | 8.11                        |
| CONGO        | 2,00,98,815                | 2.01                        |
| NEPAL        | 1,84,68,227                | 1.84                        |
| KENYA        | 1,52,92,189                | 1.53                        |
| USA          | 1,50,72,850                | 1.50                        |
| TURKMENISTAN | 1,47,01,887                | 1.47                        |

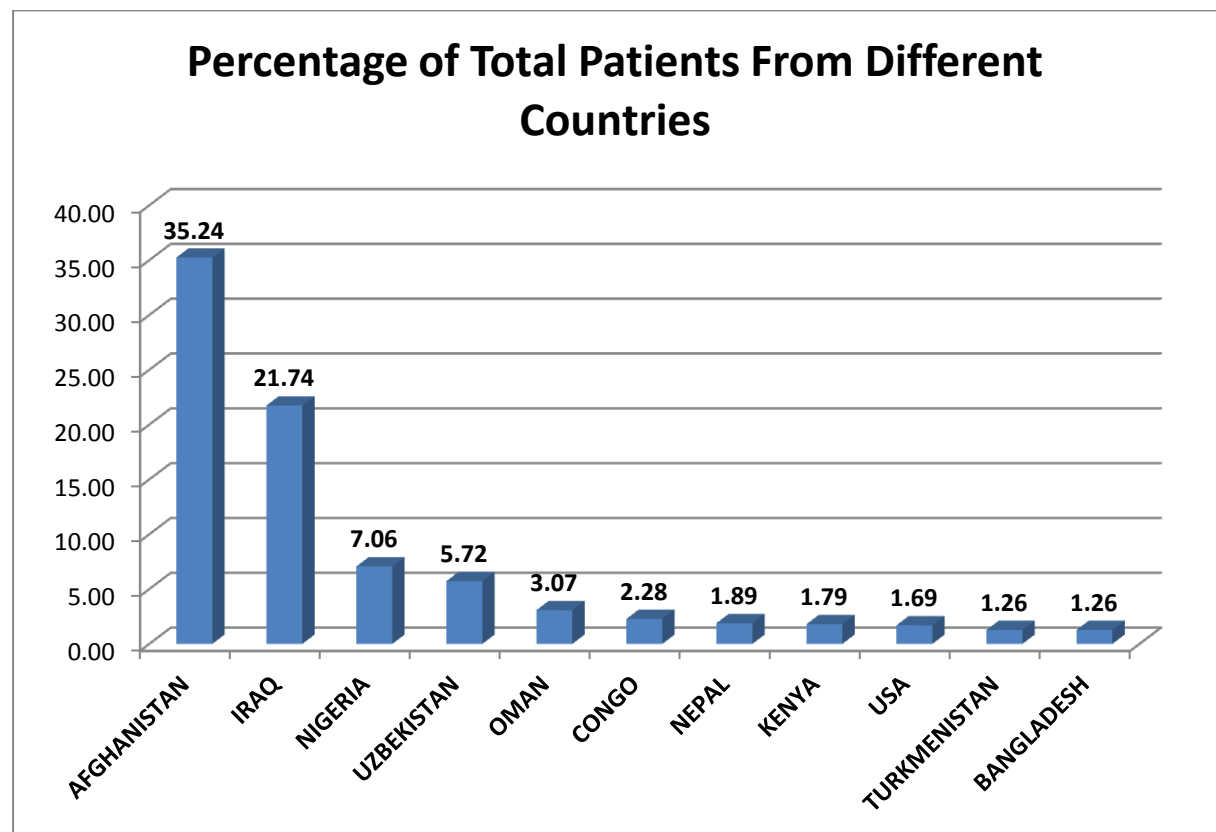


**Step 2:-**

**Top 10 Countries in terms of Total Number of Patients -**

| Rank | Country      | Total No. of Patients | Percentage of Total Patients |
|------|--------------|-----------------------|------------------------------|
| 1    | AFGHANISTAN  | 1811                  | 35.24                        |
| 2    | IRAQ         | 1117                  | 21.74                        |
| 3    | NIGERIA      | 363                   | 7.06                         |
| 4    | UZBEKISTAN   | 294                   | 5.72                         |
| 5    | OMAN         | 158                   | 3.07                         |
| 6    | CONGO        | 117                   | 2.28                         |
| 7    | NEPAL        | 97                    | 1.89                         |
| 8    | KENYA        | 92                    | 1.79                         |
| 9    | USA          | 87                    | 1.69                         |
| 10   | TURKMENISTAN | 65                    | 1.26                         |
| 10   | BANGLADESH   | 65                    | 1.26                         |

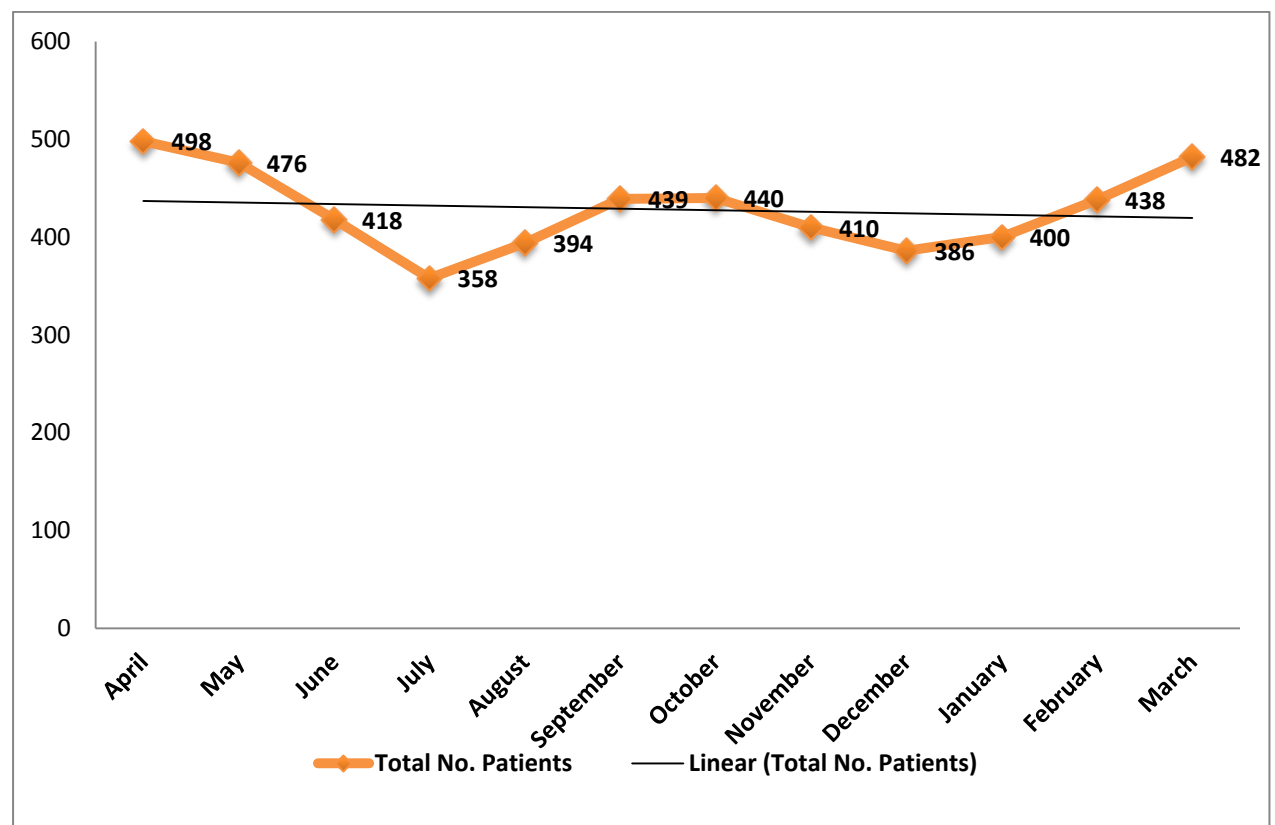
**Total Number of International Inpatient treated in MSSH, Saket – 5139**

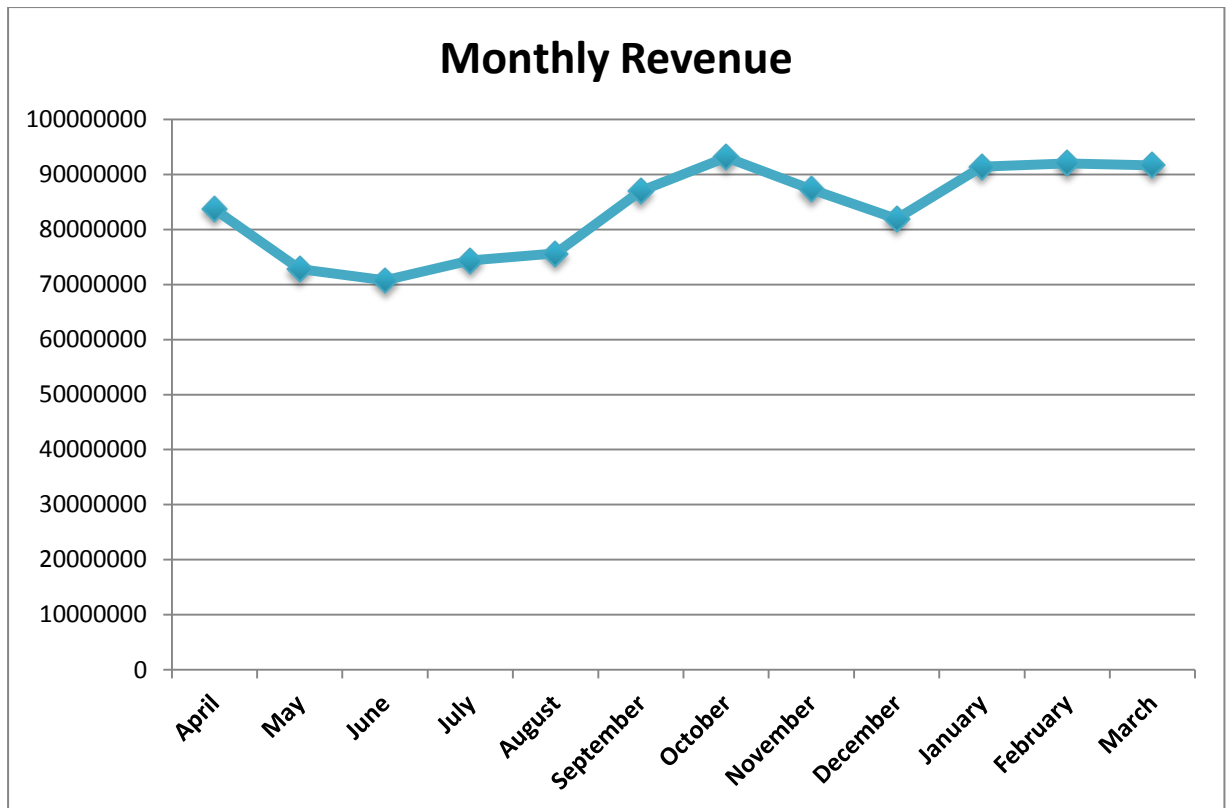


### Step 3:-

Monthly distribution of total Number of Patients and Revenue Generated:-

| Month        | Total No. Patients | Revenue       |
|--------------|--------------------|---------------|
| April        | 498                | 8,36,90,509   |
| May          | 476                | 7,27,88,558   |
| June         | 418                | 7,07,51,780   |
| July         | 358                | 7,43,43,663   |
| August       | 394                | 7,56,17,771   |
| September    | 439                | 8,69,62,105   |
| October      | 440                | 9,31,14,909   |
| November     | 410                | 8,72,87,909   |
| December     | 386                | 8,19,27,607   |
| January      | 400                | 9,13,87,988   |
| February     | 438                | 9,20,06,286   |
| March        | 482                | 9,16,60,575   |
| <b>Total</b> | <b>5139</b>        | 100,15,39,660 |

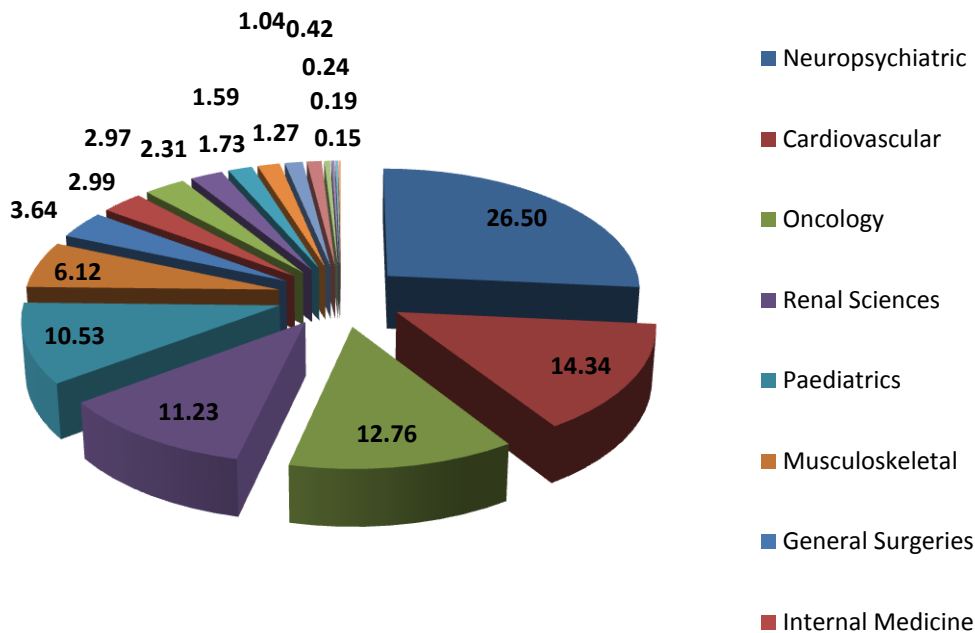




#### Step 4-

| Speciality                                 | Percentage of Total Revenue | Total Revenue |
|--------------------------------------------|-----------------------------|---------------|
| Neuro Sciences                             | 26.50                       | 26,74,82,027  |
| Cardiovascular                             | 14.34                       | 14,47,20,432  |
| Oncology                                   | 12.76                       | 12,88,39,749  |
| Renal Sciences                             | 11.23                       | 11,33,55,008  |
| Paediatrics                                | 10.53                       | 10,62,39,634  |
| Musculoskeletal                            | 6.12                        | 6,18,20,849   |
| General Surgeries                          | 3.64                        | 3,67,05,080   |
| Internal Medicine                          | 2.99                        | 3,01,35,701   |
| Plastic Surgeon                            | 2.97                        | 2,99,50,698   |
| Obs. And Gyn.                              | 2.31                        | 2,33,14,665   |
| ENT Specialist                             | 1.73                        | 1,74,27,435   |
| Gastroenterology And Hepatology            | 1.59                        | 1,60,84,598   |
| Minimal Access Metabolic Bariatric Surgery | 1.27                        | 1,27,95,800   |
| Pulmonologist                              | 1.04                        | 1,05,38,524   |
| Others                                     | 0.42                        | 41,97,007     |
| Endocrinologist                            | 0.24                        | 24,05,299     |
| Nuclear Medicine                           | 0.19                        | 18,68,336     |
| Ophthalmologist                            | 0.15                        | 14,92,005     |
| Total                                      |                             |               |

## Percentage Share of Each Speciality



| Rank | Speciality        | Percentage of Total Revenue | Total Revenue |
|------|-------------------|-----------------------------|---------------|
| 1    | Neuropsychiatric  | 26.5                        | 26,74,82,027  |
| 2    | Cardiovascular    | 14.34                       | 14,47,20,432  |
| 3    | Oncology          | 12.76                       | 12,88,39,749  |
| 4    | Renal Sciences    | 11.23                       | 11,33,55,008  |
| 5    | Paediatrics       | 10.53                       | 10,62,39,634  |
| 6    | Musculoskeletal   | 6.12                        | 6,18,20,849   |
| 7    | General Surgeries | 3.64                        | 3,67,05,080   |

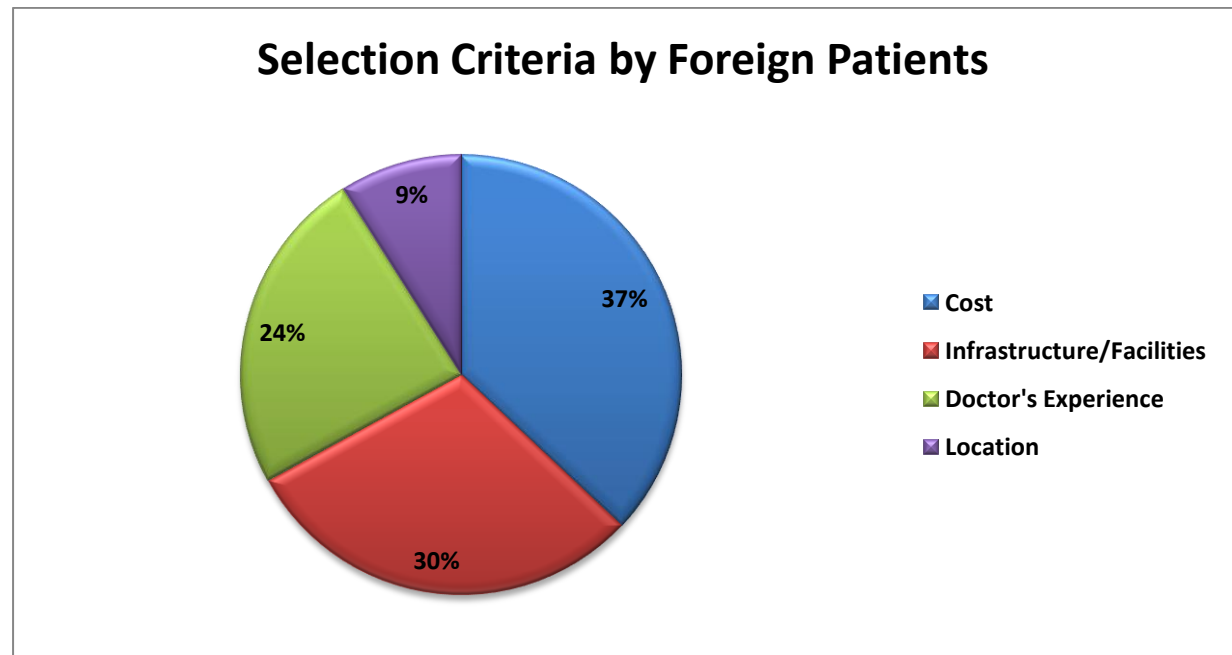
## CONCLUSION:

Based on the above discussion and data analysis we compare the facts with the present findings:

Previously Medical Tourism was seen only from the developed nation's perspective because the high quality health care was available to only few developed countries like USA, UK, Norway, Denmark, Germany etc. People were attracted to these countries only because there were no standards to check the quality of hospitals. With the inclusion of Universal quality control bodies like JCI and JCAHO (Joint Commission on Accreditation of Hospital Organisations) to attract tourists , people started recognising other quality healthcare providing countries like Thailand, Malaysia, Singapore and India.

### Selection Criteria Adopted by foreign patients coming to India-

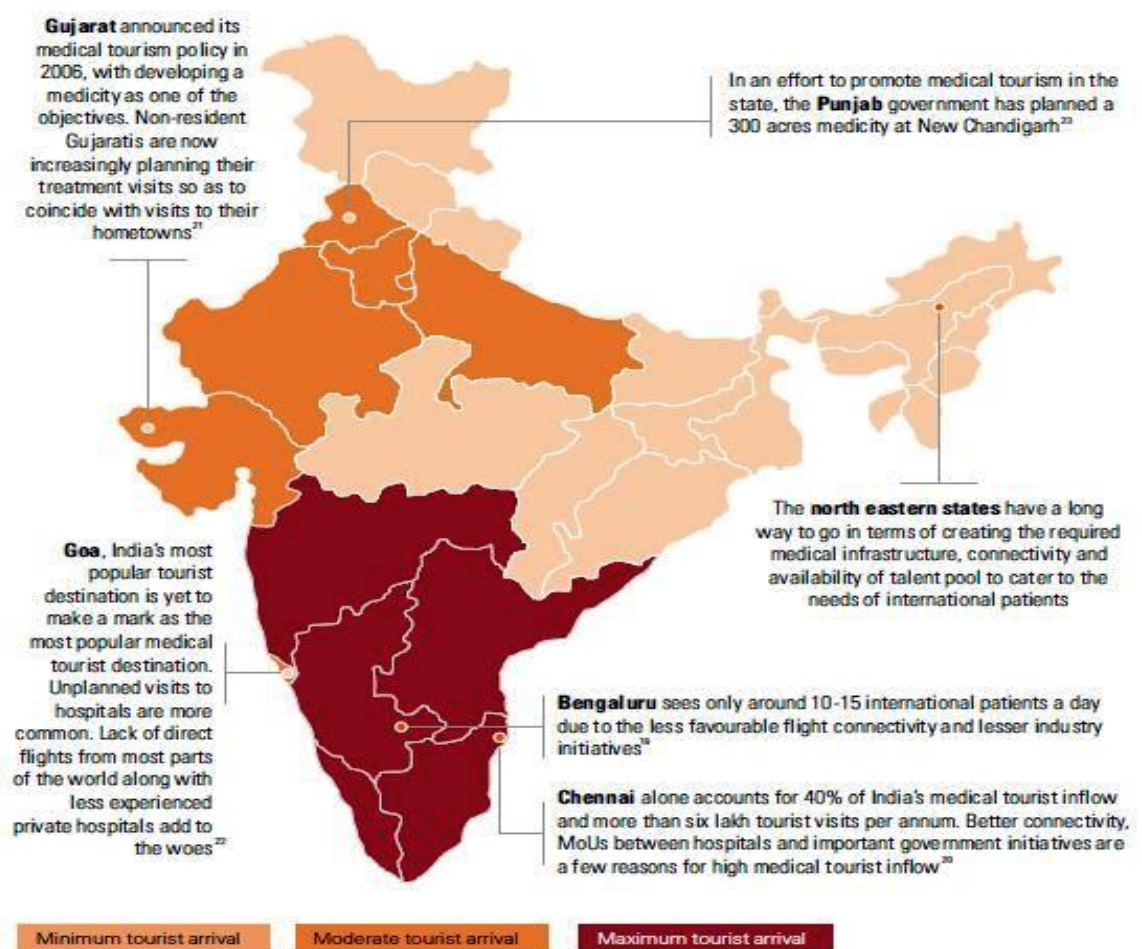
| Factor                    | Contributing Percentage |
|---------------------------|-------------------------|
| Cost                      | 37%                     |
| Infrastructure/Facilities | 30%                     |
| Doctor's Experience       | 24%                     |
| Location                  | 9%                      |



### Present Scenario-

1. The medical tourism landscape in Asia is continually evolving as price no longer remains the only important consideration; focus has now shifted to diversity in offerings, niche offerings, and even customised luxury. Thailand, Singapore, and India have established themselves as credible medical tourism destinations, globally.
2. The competition is stiff with each economy building its value proposition by further enhancing its USP. With the governments realising the true potential of the segment, there has been a concerted effort to promote and endorse the industry at all viable platforms. Other countries in Asia are also fast emerging as popular medical tourist destinations; Philippines, Taiwan, Korea, etc.

### 3. RECENT TRENDS AND IMPORTANT ANNOUNCEMENTS REGARDING MEDICAL TOURISM IN INDIA:



- Growth in the segment is driven by India's value proposition which is the right combination of quality and cost efficiency. Indian hospitals provide treatment in the fields of cardiology, orthopaedics, and even cosmetology at costs which are almost a tenth of the cost for the same procedures in developed countries.
- The presence of private hospitals with international standards and skilled medical professionals has helped strengthen India's position in medical tourism.
- The formalities involved in travel to India, while fairly convenient for a few countries, can be further facilitated for countries which form a major portion of the FTA pies.
- The infrastructure in India with respect to roads in cities, sanitation, and urban infrastructure may be responsible for souring tourist experiences, and there is a need to improve these facilities at least in the popular medical hubs of the country
- Yoga, meditation, Ayurveda, and other traditional methods of treatment are major service offerings that attract tourists from European nations and the Middle East to India. These services form a part of the wellness continuum and are gaining traction as competitors scale up their capacity and launch focussed digital campaigns.

## MARKETING STRATEGIES:

### 1. Bundle Method:

The act of placing several products or services together in a single package and selling for a lower price than would be charged if the items were sold separately. The package usually includes one big ticket product and at least one complementary good. Bundled pricing is a marketing method used by retailers to sell products in high supply. Bundling can be used by firms to discriminate among consumers or to extend market power into a related product market. Bundling can be profitable, reduce a rival's profits and overall welfare, or may drive rivals from the market.

### 2. SWOT of present data:



### 3. Left channels :

Lefts channels for opportunities in top 7 target countries should be identified. Like: - MAX's regional offices should be created for the countries where there is no existing network of MAX.

### 4. Design PPPP and develop new forecast model for such New Market based on Burden of Diseases for the respective countries. Branding and Imaging for Doctors and Hospital should be created for the same.

## 5. Packaging and Costing :

Country wise list of packages according to Burden of Diseases should be given. More focus should be given on particular disease burden for a particular country with lucrative packages including Family Health Packages. Expensive surgeries and procedures along with Day Care Surgeries at good prices should be offered.

## 6. Concentrate on Indian origin NRIs :

Concentrating on Indian origin NRIs can act as a marketing tool via word of mouth. They are also a reliable source of revenue as most of them visit India somehow and they know the differences in the costing and packaging procedures.

## 7. Less Legal (VISA) formalities for the top 7 target countries analysed i.e. Bangladesh, Maldives, Afghanistan, Nigeria, Russia, Iraq and UAE. This can help in minimising the time for legal formalities and this can significantly affect the frequency of visiting India.

## 8. Alliances with other authorities:-

Hotel tie-ups, travel agencies tie-ups should be established. Medical tourism consultancies should have ties ups with MAX. There should be separate facilitators at their native country and after coming to India. From bringing the patients to MAX, till their return they should take care of everything.

## 9. New Market for the developed nations:

New Market can be created for the developed countries like USA and UK also. Because the above analysis reveals that these developed countries are amongst the top 10 target countries.

## 10. Cost factor can play a vital role in creation of such New Markets.

**INDIA HAS EDGE OVER ITS PEER COUNTRIES IN TERMS OF COST EFFECTIVENESS:**

| Procedure cost (US\$)   | U.S.     | Thailand | Singapore | Malaysia | U.A.E. | South Korea | Mexico | Costa Rica | India |
|-------------------------|----------|----------|-----------|----------|--------|-------------|--------|------------|-------|
| Heart bypass            | 1,30,000 | 11,000   | 18,500    | 9,000    | 40,900 | 31,700      | 27,000 | 24,100     | 7,000 |
| Heart valve replacement | 1,60,000 | 10,000   | 12,500    | 9,000    | 50,600 | 42,000      | 30,000 | 30,000     | 9,500 |
| Hip replacement         | 43,000   | 12,000   | 12,000    | 10,000   | 46,000 | 10,600      | 13,900 | 11,400     | 7,020 |
| Knee replacement        | 40,000   | 10,000   | 13,000    | 8,000    | 40,200 | 11,800      | 14,900 | 10,700     | 9,200 |

Source: 'Indian Healthcare Services', J.P. Morgan, 12 March 2014, p2; 'Medical Tourism in India: Progress, Opportunities and Challenges', Madras School of Economics, Monograph 26/ 2013, March 2013, p21.

## 11. Regular opportunity checks :-

There should a regular opportunity checks after an interval of 3 months for updating the New Markets.

## 12. Existing market should be excavated more and more to create a sustainable and consistent source of revenue for longer period of time.

## RECOMMENDATIONS:

1. Synchronisation in agenda and expectations with respect to medical value travel on the regulations front is needed to propel the segment in the country.
2. **Single consultative platform representative of all the ministries** involved in medical tourism to aid endorsement and facilitation of medical tourism at a national level
3. • The presence of multiple bodies at the policy making level can lead to the creation of divided agendas with a diluted focus on promoting India as a preferred medical tourism destination.  
• Creation of a **Single Consultative Platform (SCP)** with a unified agenda of promoting medical travel can help ensure effective trouble shooting and efficient policy making.
4. **Airports** are the first point of contact that a tourist makes with Indian soil, ease in accessing facilities at airports will help enhance the patient experience
5. **Alliances amongst private players** (different industries e.g. aviation/ hospitality, and healthcare) to help improve patient experience from a comfort and ease of journey perspective like Apollo Emirates.
6. The role of the government in establishing relationships and facilitating tourist inflow cannot be understated. **MOIA** can also play an important role in building 'Brand India' as a preferred destination for medical tourism via marketing campaigns, road shows, and networking meets. Government alliances such as **MoUs** to increase the number of medical tourists (role of Ministry of Overseas Indian Affairs (MOIA)).
7. India needs to invest heavily in **improving basic infrastructure** such as roads and airport facilities in the medical hubs to compete with other Asian counterparts.
8. There is an urgent need of a **nationally authenticated government website** to serve as a **one-stop information window** for prospective medical tourists.
9. The **role of facilitators** needs to be defined and regularised by the government to promote transparency in the Indian medical tourism industry.

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## PROJECT REPORT 3:

### TITLE:

## ENABLING TECHNOLOGIES FOR ACHIEVING BEST PRACTICES IN CSSD AT MAX HOSPITAL, SAKET, NEW DELHI

(Present to future scenarios)

### INTRODUCTION/BACKGROUND:

**Central Sterile Supply Department (CSSD)** also called as sterile processing department (**SPD**)/ central supply (**CS**) is the most essential feature of the hospital. It aims at centralizing the activities of receipt, cleaning, assembly, sterilization, storage and distribution of sterilized materials from a central department where bacteriologically safe sterilization is done under controlled conditions with adequate managerial and technical supervision at an optimum cost

The **scope** of CSSD has enlarged from that of a department, which was similar to an autoclave sterilization unit to encompass hospital infection control and stands for a dedicated workflow of sterile supplies and goods.

Ideally, CSSD is an independent department with facilities to receive, clean, pack, disinfect, sterilize, store and distribute instruments (both multiuse and single-use device), as per well-delineated protocols and standardized procedures.

In this age of cost cutting and space constraints, having separate CSSD, we can decrease the cost of sterilizers through centralization of equipment in one department. The rise in incidence of nosocomial infection with corresponding increase in mortality, length of stay and cost can be brought down by establishing a good CSSD set-up.

Moreover, the fatal disease AIDS became so powerful and spread worldwide, the demand for proper procedures for infection control gained momentum enormously. Diseases such as Hepatitis B & C, known to be transmitted through contaminated surgical instruments, stimulated the need for stricter guidelines for disinfection and sterilization. The essentials of the department are correct design, modern plant, skilful operators, proper work-flow, regular skilled maintenance to avoid breakdowns of plant. It contributes to reduction in hospital infection rate.

### REVIEW OF LITERATURE:

- 1928 – American College Of Surgeons – CSSD.
- 1942 – World War II .Cairo, British SDS Unit .
- 1955 – Cambridge Military Hospital – Regular CSSD in UK.
- 1965 – First CSSD in India – Safadarajang Hospital.
- Hospital administrators today recognize the CSSD as one of the most important services departments in the hospital(Indmedica journal of hospital administration)
- The Central Sterile Supply Department being the most essential department within a hospital set-up contributes in reduction of infection rate, says, **Dr Sudhakar Manav**, CEO, Ojjus Medicare.

- J Pub Health Med Res 2013;1(2):58-62, states that CSSD is the need of the hour.

### **AIM:**

The CSSD is to provide an efficient, economic, continuous and quality supply of sterilized material to various areas of the hospital to deliver quality and infection free patient care.

Central Sterile Supply Department (CSSD) is a service unit in a hospital that processes, issues, and controls the sterile stores supply to all departments of the hospital. The essentials of this department are correct design, appropriate equipments, skillful operators and a unidirectional work flow.

### **NEED/ROLE/FUNCTIONS OF CSSD:**

- To provide all the departments with an adequate supply of reliably sterilised material for immediate and emergency use. The sterilisation process is conducted under controlled conditions at minimum cost to reduce the incidence of hospital associated infections.
- To supervise and provide facilities for the bulk-sterilisation of the materials.
- To pool in the equipment resource of the hospital for economical and effective utilisation under adequate managerial and technical supervision.
- To provide facilities for in-service teaching and training of nursing and ancillary personnel in the sterilisation practices.
- To undertake operation research techniques for improving sterilisation practices and to participate in research pertaining to supply of equipment.
- To provide the most suitable material for the patient care.
- To play an effective role in hospital infection control activities.
- To ensure quality control for infection free patient care.

### **OBJECTIVES OF STUDY:**

1. To observe and assess the process flow of CSSD at Max Super Speciality Hospital, Saket, New Delhi.
2. To assess the feasibility of IT enabled inventory and process management system.

### **METHODOLOGY:**

The study involved observations and hence was a Descriptive study. This study was done in CSSD and all the touch points including planning, zoning, and process flow were observed at various point of time. The tools used for this study were personal interviews and keen observations. Personal interviews had been conducted for mapping of CSSD with all departments of the hospital.

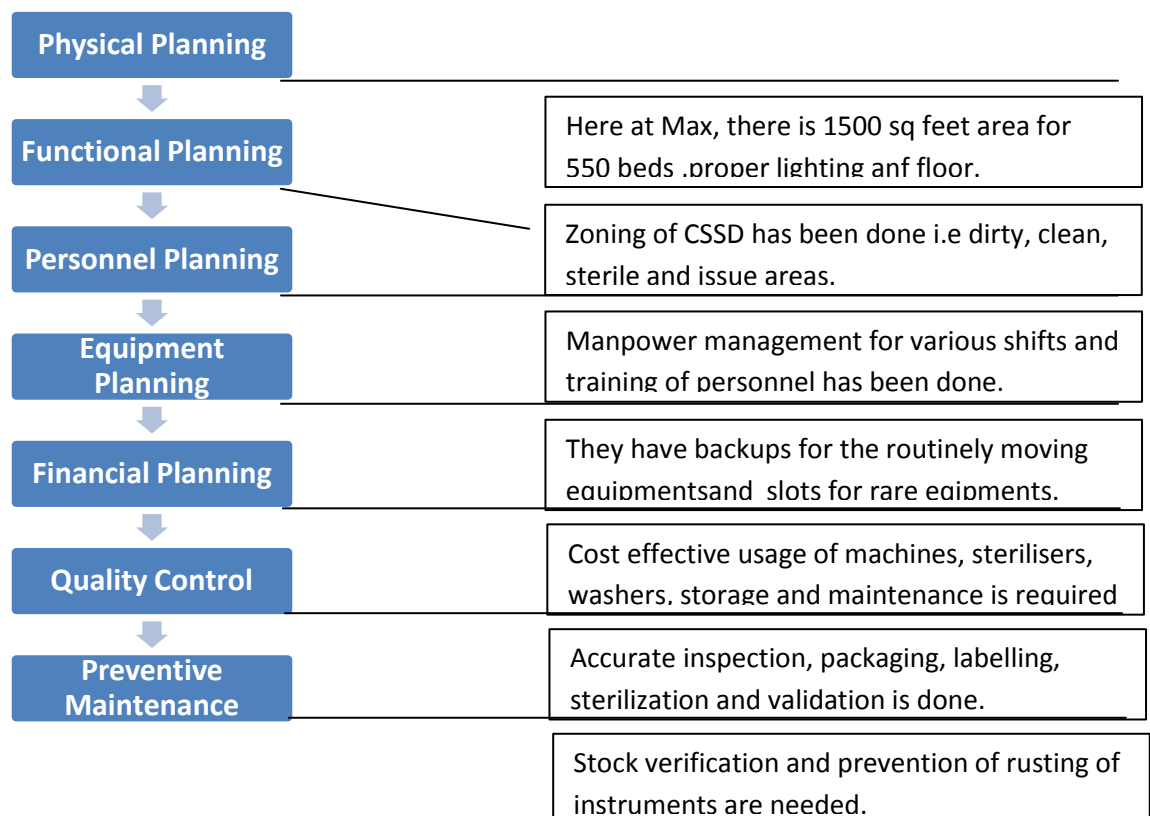
## PLANNING:

The size and location usually depends on the number of the hospitals the CSSD will serve as well as the number of beds and the future expansion of the hospital. However 7 to 10 square feet per bed is recommended as an area of requirement for the CSSD.

According to *Thomson* an area of 2000 square feet for a 500 bedded and 3500 square feet for 1000 bedded hospital will be adequate for Indian conditions.

- There should be no back tracking of sterile goods.
- The materials/ items from contaminated and sterile areas should not get mixed.
- There should be physical barrier between clean and dirty areas.
- The floor should be smooth, impervious, non-skid and robust.
- Light fittings should be recessed
- Relative humidity should be maintained at  $45 \pm 5$  per cent
- The clean area should be provided with air locks and maintained at positive pressures relative to the adjoining spaces. The minimum ventilation rate should be six to 10 air changes per hour.
- The work area should be made of marble / granite / stainless steel
- The sterilisation must be planned for autoclaving by steam as well as by gas since certain items such as rubber; plastic or delicate instruments cannot be autoclaved.

Broadly, Planning is divided into 7 sub types:



**LOCATION:**

The CSSD should be close to the casualty, operation theatre and wards which are the largest consumer of the sterilized material. In multistoried buildings, CSSD may be planned in the lower floor right under the operation theatre where vertical movement will be the quickest possible movement of the material.

**LAYOUT:**

The CSSD should have four zones for a smooth work flow. The following facilities should be provided in the layout:

1. Entrance lobby
2. Reception and Cleaning room
3. Glove room
4. Work room (Preparation and assembling of packs)
5. Syringe room
6. Sterilization room
7. Store room
8. Nurses room
9. Staff changing room
10. Cloak room

**EQUIPMENTS IN CSSD:**

1. Jet water cleaning gadgets
2. Ultrasonic washers
3. Glove sharpener
4. Needle sharpener
5. Gas, Chemical or Steam autoclaves
6. Testing apparatus for efficiency of sterilization

**ITEMS COMMONLY HANDLED BY CSSD:**

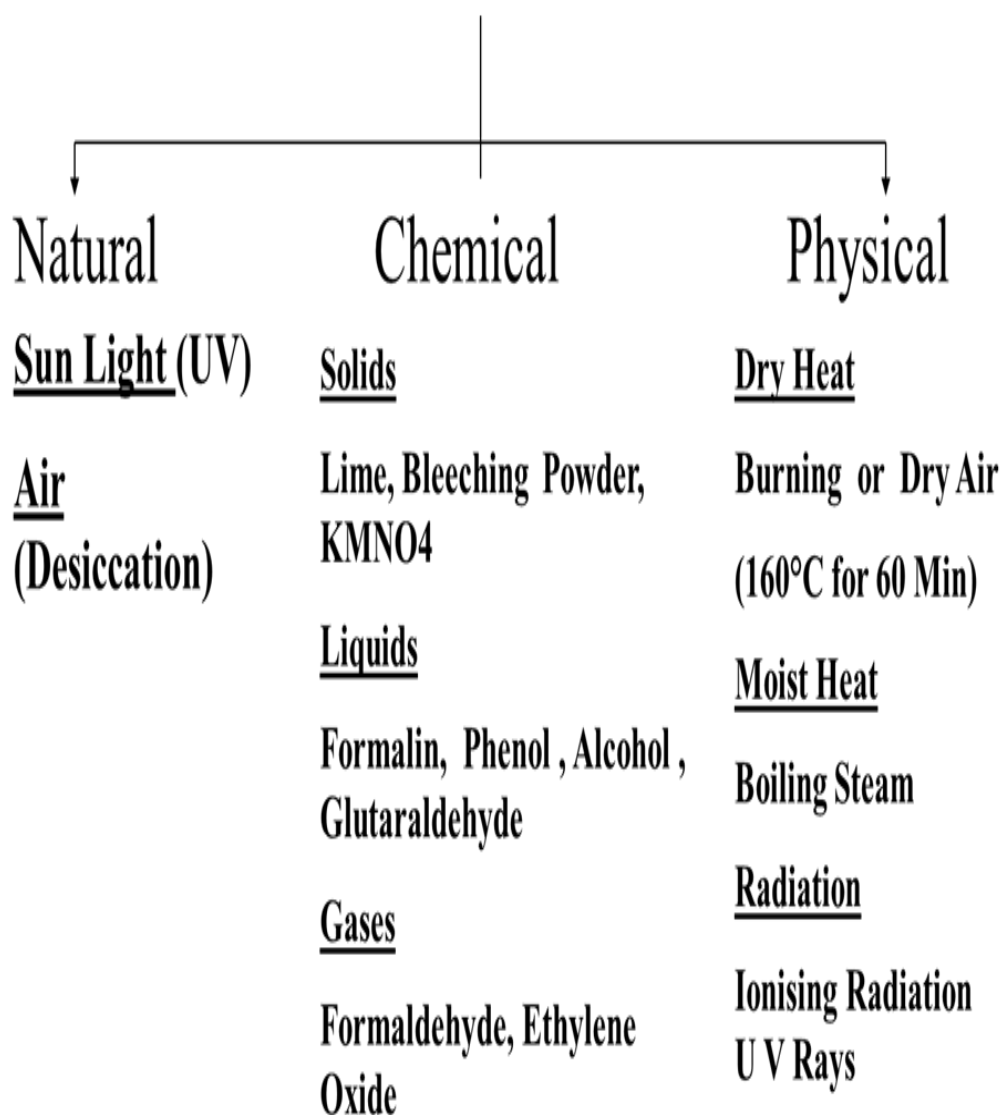
1. Syringes
2. Procedure Sets( Lumbar puncture ; sternal puncture ; venesection ; paracentesis ; aspiration ; catheterization ; tracheotomy ; suturing ; dressing ; biopsy ; incision & drainage ; aortography ; cardiac resuscitation ; etc)
3. Needles
4. I.V.Fluids
5. Treatment Trays.
6. O.T Instruments

(Diet, drugs, bedpans & urinals are not included by convention)

## METHODS OF STERILIZATION:

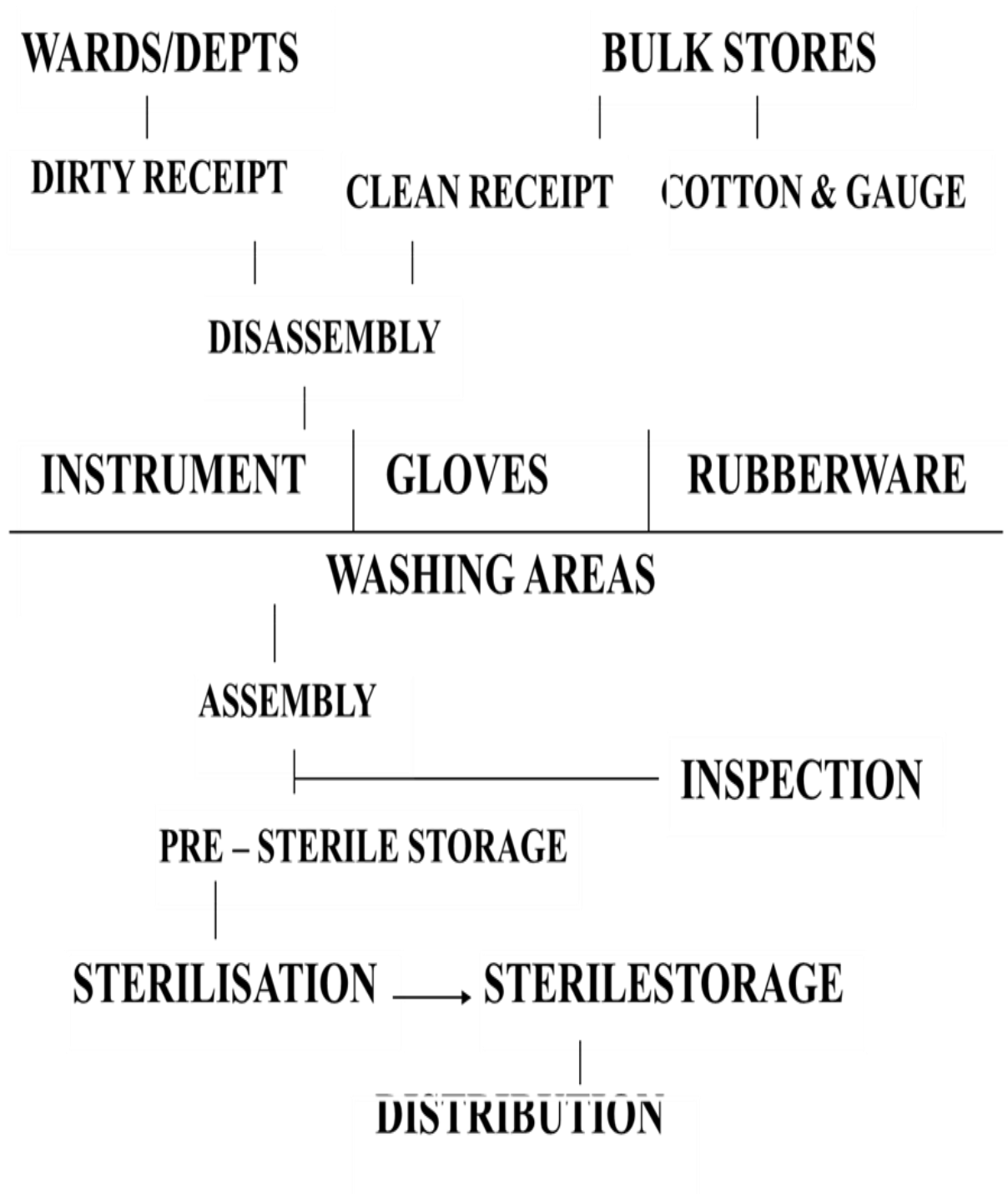
Here at Max Super Speciality Hospital, Saket, Steam sterilization, ETO sterilization and Chemical sterilization are routinely performed. **Validation of CSSD** is done by **daily Bowie Dick Test** and by **Batch Monitoring** through chemical indicator.

### Methods Of Sterilization / Disinfection



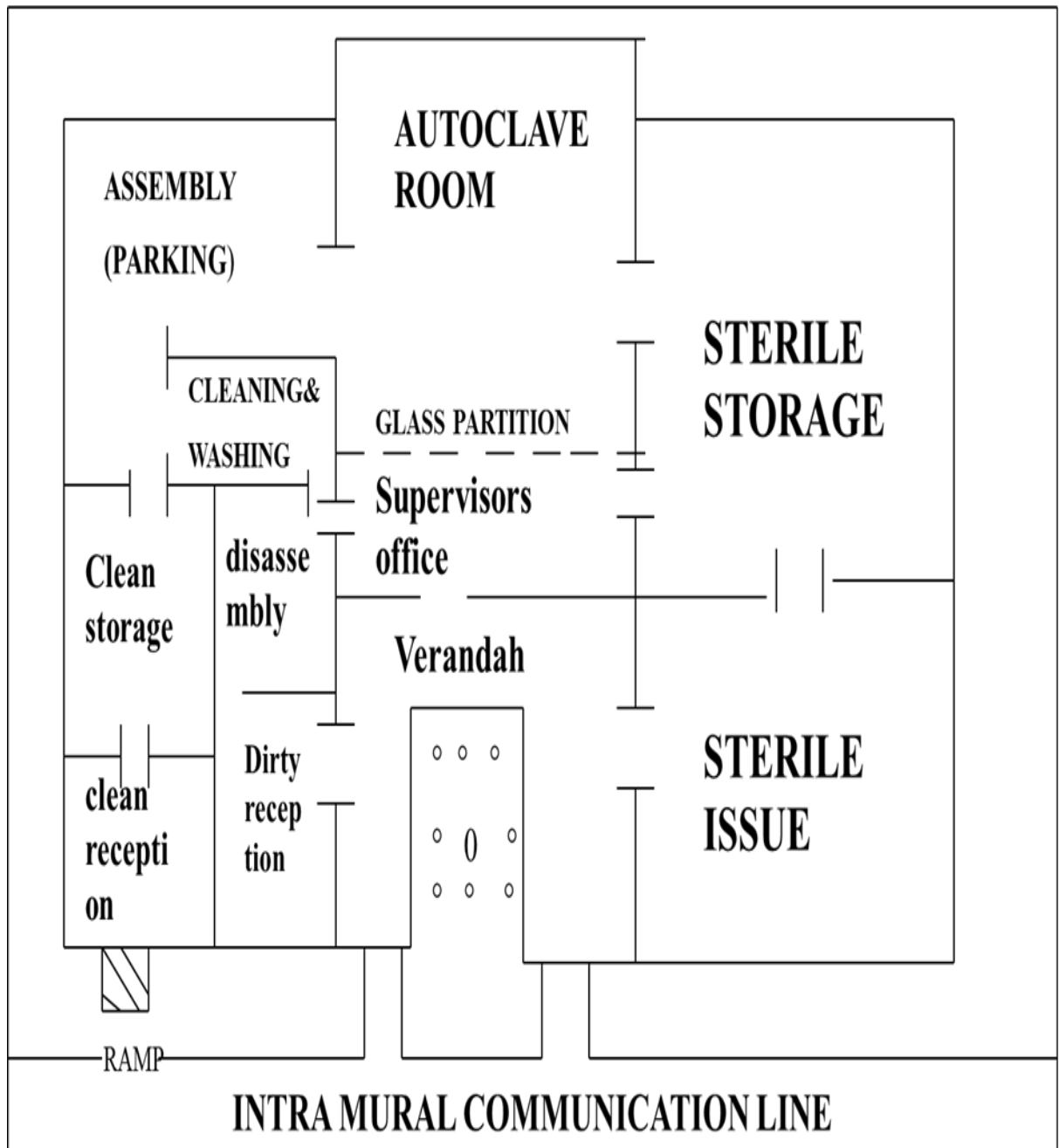
The normal process flow of CSSD is as follows:

## **FLOW PROCESS : CSSD**



# *A SUGGESTED LAYOUT OF*

## *CSSD*



## DISCUSSION:

The CSSD of Max Hospital, Saket is currently performing up to the mark. The ideal processes are followed over here and are working smoothly with the present infrastructure and format. But, all the records of CSSD are being prepared manually. There is no facility to check the process flow via computers. The inventory records are also maintained manually.

The manual way of record maintaining is acceptable for current or may be acceptable for not more than 2-3 years, but in this era of information technology it is really hard to continue with this way only.

At this point of time, we really need to make our CSSD IT enabled for future perspectives. The IT enabled CSSD is the current need of an hour now.

The CSSD of Max Hospital, Saket requires the Computerised system for following areas.

| S.No. | Process                 | Present Scenario                                                                                                                                                                                                             | Future Requirement                                                                                                                                                                                                                                                                                                               |
|-------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.    | Dirty Receiving         | No. Queue System, GDAs come directly inside the CSSD with dirty equipments, No IT enabled receiving of equipments.                                                                                                           | Proper Queue management system should be deployed. The receiving should be completely IT enabled.                                                                                                                                                                                                                                |
| 2.    | Washing                 | Once received equipments sent to washing directly, manual records are maintained.                                                                                                                                            | The records should be maintained on computers.                                                                                                                                                                                                                                                                                   |
| 3.    | Assembly and Inspection | <p>The assembly is being done by the workers directly. They follow a simple manual process flow and check the checklist when required.</p> <p>For inspection also a normal checklist is followed. No records maintained.</p> | <p>The assembly and inspection records should be maintained on computers. Software should be installed, which should have the assembly and inspection checklist.</p> <p>The second option can be a Touchscreen Over The Counter Computer, which will have a proper checklist for every procedure. The technician will do the</p> |

|    |                 |                                                                                                            |                                                                                                                                                                   |
|----|-----------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                 |                                                                                                            | mentioned procedure and will mark the procedure as complete immediately.                                                                                          |
| 4. | Sterilisation   | The sterilisation process is presently monitored by manual procedure. Only a register is being maintained. | We should prepare a checklist on the computer for the perfect monitoring of sterilization procedure.                                                              |
| 5. | Sterile storage | Presently only manual records are maintained for the storage and stock management of CSSD.                 | An inventory management system need to be installed in CSSD, the software should take care of all the inventory related tasks.                                    |
| 6. | Dispensing      | Currently the CSSD team maintain a manual record only while dispensing of sterile goods.                   | As we will install the Inventory management system for the CSSD. The dispensing will become very easy job and the software will maintain a proper record of that. |
|    |                 |                                                                                                            |                                                                                                                                                                   |

## CONCLUSION:

The current working of CSSD at Max Hospital, Saket, New Delhi is meticulous and efficient. Despite all accurate measures, advancement in technology is needed from time to time. Much of hospital expenditure is wasted through misallocation and by technical and managerial inefficiency.

For this, IT enabled techniques will help to build a strong long run base for ideal CSSD. It also enables to save time, money and strengthen the quality parameters for ideal functioning of CSSD.

## RECOMMENDATIONS:

1. Proper queue management
2. IT based records maintenance
3. Assembly and inspection checklist via software
4. Touchscreen Over The Counter Computer
5. Checklist for perfect monitoring and sterilization technique via IT based techniques.
6. Software for inventory management and its record maintenance.
7. Batch monitoring via biological indicator (here chemical indicator is used)

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## PROJECT REPORT 4:

### TITLE:

### **A SUPPLY CHAIN AND DISTRIBUTION MANAGEMENT STUDY OF CENTRAL PHARMACY AT MAX SUPER SPECIALITY HOSPITAL, SAKET, NEW DELHI.**

#### **INTRODUCTION –**

The mission of pharmacy practice is to provide medications and other healthcare products and services and to help people and society to make the best use of them.

Comprehensive pharmacy service involves activities both to secure good health and to avoid ill-health in the population. When ill-health is treated, it is necessary to assure therapeutic benefit and avoid untoward side-effects. This presupposes the acceptance by pharmacists of shared responsibility with other professionals and with patients for the outcome of therapy.

In recent years the term “**pharmaceutical care**” has established itself as a philosophy of practice, with the patient and the community as the primary beneficiaries of the pharmacist’s actions. The concept is particularly relevant to special groups such as the elderly, mothers and children, and chronically ill patients, as well as to the community as a whole in terms of, for example, cost containment. While the basic concepts of pharmaceutical care and good pharmacy practice are largely identical, it can be said that good pharmacy practice is the way to implement pharmaceutical care.

#### **REVIEW OF LITERATURE -**

Medication distribution has long been the primary function of hospital pharmacy services. Three basic types of medication distribution systems exist—

1. Bulk wards stock replenishment
2. Individual medication order system
3. Unit-dose system

Variations of each exist, and all three systems may be in use in the same facility, depending on the strategy developed.

For example, a facility may use the bulk ward stock system for high-volume, low-cost medicines (aspirin, paracetamol, and antacids) that do not require a high level of control for preventing theft or medication errors. Individual medication order systems or unit doses can be used for medicines requiring a higher level of control.

##### **1. Bulk Ward Stock –**

- In a ward stock system, the pharmacy functions as a warehouse and dispenses bulk containers on requisition without reviewing individual patient medication orders for appropriateness. The main advantage is shorter turnaround time between prescribing and administering the medication. The use of ward stock medications should be minimized, but it is appropriate and desirable for certain situations—
  - In emergency departments and operating rooms, medications are usually required immediately after the physician prescribes them. Unless a pharmacy satellite is located in these emergency areas, dispensing

medications according to individual patient orders is not possible. Unfortunately, medicines used in these situations are often expensive, and control is always a challenge for the pharmacy department.

- In life-threatening emergency situations, medications need to be kept in patient care areas as a time-saving measure.
- High-volume, low-cost medicines can be dispensed from ward stock if the patient safety risk is low.

## **2. Individual Medication Order System –**

The individual medication order system closely resembles dispensing to outpatients: a course of therapy is dispensed according to a written prescription for an individual patient.

Compared with ward stock distribution, the advantages are that the pharmacist can review the appropriateness of therapy, a patient-specific medication profile can be maintained, pharmacy charges to patients are facilitated, and closer control of inventory is possible.

This system can limit the time intervals for dispensing: for example, an individual supply for three days of therapy is sent initially; if therapy is continued beyond three days, the empty container is returned to the pharmacy to be refilled.

## **3. Unit Dose System –**

A preferred system from a patient care perspective is the unit-dose system, which has a lower possibility for error. Medications are dispensed in unit-dose packages (each dose is separately packaged) in separate bins or drawers for each patient. Commonly, a twenty-four-hour supply is provided.

Medications returned to the pharmacy can be put back in stock without concern for identity or contamination.

This system is efficient but requires a large initial capital outlay for the purchase of repackaging machines and medication cabinets with individual patient drawers.

The cost per delivered dose is higher than with bulk packaging, but this increased expense may be offset by reduced wastage and easier detection of leakage.

Hospitals in some countries have found innovative ways of adapting local technologies to construct their own fixtures and equipment.

## **NEED FOR THE STUDY –**

1. The study focuses on the facilities of supply chain management and distribution services at Max Central pharmacy. The persons responsible for ordering, receiving, storing, securing, dispensing and reporting on stock status and consumption various medicines are interviewed and observed.
2. The purpose of this part of the assessment is to document current pharmacy management procedures and capacity, and to identify areas that may need support to be able to ensure the consistent availability of quality services.

## **OBJECTIVE –**

- To observe the Supply Chain and distribution management of central pharmacy.

## **METHODOLOGY –**

It was a descriptive type of study as all the steps in the process were observed. This study was done in the in-patient pharmacy. Under the study, all the points related to drug dispatch were studied.

The tools used for the study were Personal Interviews and keen observations.

## **DISCUSSION:-**

### **Responsibilities of Staff: -**

The hospital pharmacist should be an expert on medicines who advises on following points –



He must be a supply manager who ensures that medicines are available through procurement, storage, distribution, inventory control, and quality assurance. The balance between these two roles varies, depending on the individual's background and the work setting. A pharmacist may assume a prominent clinical role in settings where his or her knowledge of clinical pharmacology and capacity to provide expert advice have earned the acceptance of hospital medical and nursing staff.

## **PURCHASING AND STOCK MANAGEMENT –**

In some hospitals, a separate department manages all hospital purchasing (pharmaceuticals, medical supplies, equipment, and so forth); this department may be called medical stores or materiel management. In such cases, the chief pharmacist prepares an annual budget request for pharmaceutical purchases and places orders for medicines through the medical stores.

- Here in Max Super Speciality Hospital, Saket, all the purchasing related decisions of Pharmacy unit are being made by Central Pharmacy division of Max Health Care.
- The Saket unit of Pharmacy makes indents for the required drugs and sends it to Central Pharmacy Division.
- The Central Pharmacy commercial department releases the purchase orders for the particular drugs required.
- Weekly requisition and indenting is being done and the ABC method is being followed for the procurement of drugs.

In some settings, the pharmacy department manages pharmaceutical purchasing directly.

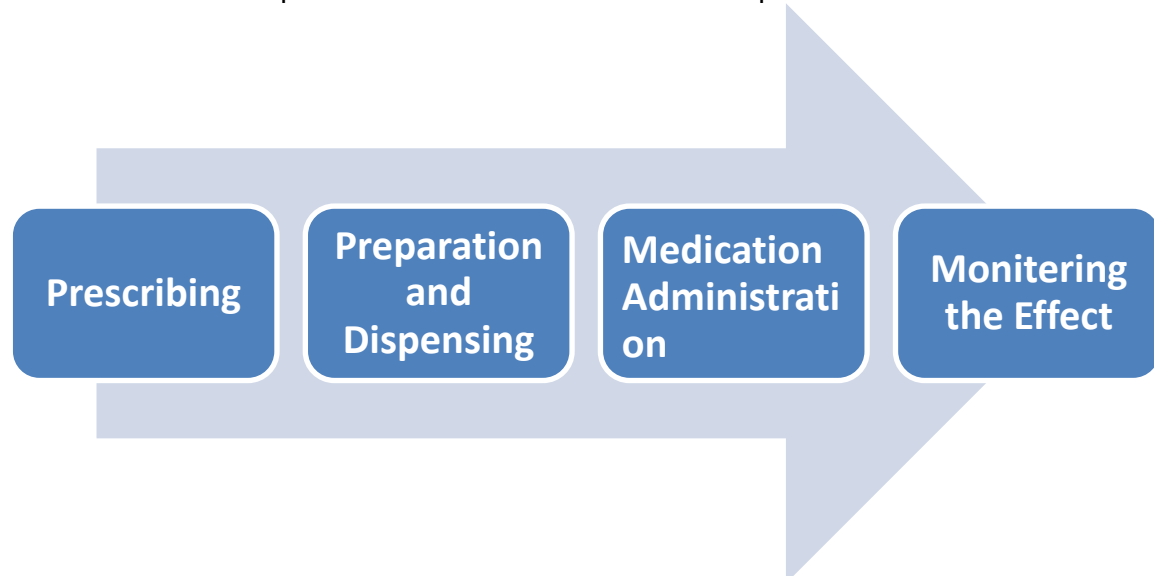
No single individual should have total control of pharmaceutical procurement. A designated committee should review and approve all purchases; either a special purchasing committee may manage this function. Procedures for procurement and inventory management should be written in a manual that has been approved by hospital administration and the appropriate committees.

Stock management procedures are determined by the facility's size and whether a warehouse is attached to the hospital or not.

- The medicines are arranged according to the software installed in central pharmacy.
- The name of software is NASA. The storage is being done in shelves, drawers and racks via generic names in alphabetical order.
- The near to expire drugs are stored separately.

### THE MEDICATION USE: -

The medication-use process can be divided into four components—



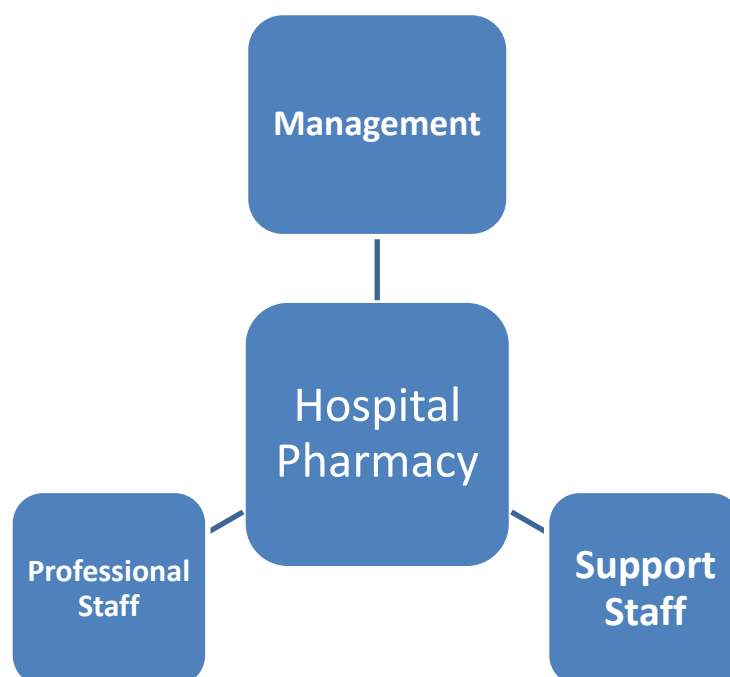
1. **Prescribing**-The physician has overall responsibility for the care of the patient, prescribing or ordering medications as part of the treatment plan. The mechanisms to ensure appropriate prescribing within the hospital customarily fall within the purview of the medical staff committees.
2. **Preparation and Dispensing**- The pharmacy department, under the direction of a registered pharmacist, is responsible for preparing and dispensing medications. Policies and procedures for these functions should be approved by the governing councils. The chief pharmacist reports to hospital administration.
3. **Medication Administration**- Administering medications is generally the responsibility of the nursing staff. The chief nursing officer oversees all nursing functions. In some cases, physicians may administer medicines such as anaesthetic agents. Other health care professionals may administer medicines within the scope of their practice (for example, midwives attending deliveries).
4. **Monitoring the Effect of Medications on Patients and Ordering Appropriate changes In Therapy**: Monitoring activities are primarily the responsibility of the physician. However, observation and reporting are required from the person who administered the medication (usually the nurse) and from other members of the health care team involved in the patient's therapy.

Government agencies and licensing boards regulate medications through laws and professional practice standards. The laws and regulations usually specify that the chief pharmacist be the person responsible for the control of medications within a hospital, including procurement, storage, and distribution throughout the facility.

### **ORGANISATION OF HOSPITAL PHARMACY SERVICES-**

In organizing hospital pharmacy services, both the way in which the staff is organized and the physical layout of the building must be considered.

Personnel Hospital pharmacy personnel can be divided into three major categories-



- 1. Management-** Management includes the chief pharmacist and sometimes deputy chief pharmacists, who are responsible for procurement, distribution, and control of all pharmaceuticals used within the institution and for management of personnel within the pharmacy department.
- 2. Professional Staff-** These professionals are qualified pharmacists, who procure, distributes and control medications and supervises support staff for these activities. In Max Saket, pharmacists provide clinical consulting services and medicine information.
- 3. Support Staff-** The support staff category often includes a combination of trained pharmacy technicians, clerical personnel, and messengers.

### **PHYSICAL ORGANISATION:**

The extent of the pharmacy's physical facility is determined by the size of the hospital and the services provided.

The Max, Saket have a large pharmacy department which is having the following sections within two physical spaces that is in both the buildings—

- Administrative offices
- Bulk storage
- Narcotic or dangerous drug locker

- Repackaging
- Intravenous solution compounding
- Inpatient and outpatient dispensing
- Medicine information resource centre
- After-hours pharmacy
- Emergency medicine storage

- ❖ In larger hospitals, satellite pharmacies are beneficial because they enable a shorter turnaround time for individual medication orders, especially in distribution systems that dispense medications packaged for individual patients.
- ❖ Satellites also increase the pharmacist's presence in the patient care area, facilitating interactions with medical staff, nursing staff, and patients, and thus ultimately improving patient care.

## **INPATIENT MEDICATION MANAGEMENT-**

### **PROCESS FLOW OF INPATIENT MEDICATION AT MAX HOSPITAL, SAKET :-**

The Max Hospital, Saket follows the Software based dispensing model for the In Patient Medication. The process includes following steps –

**Step – 1:-** The Clinicians post the Medication Orders in CPRS.

**Step – 2:-** The Pharmacists receive the orders and verify them.

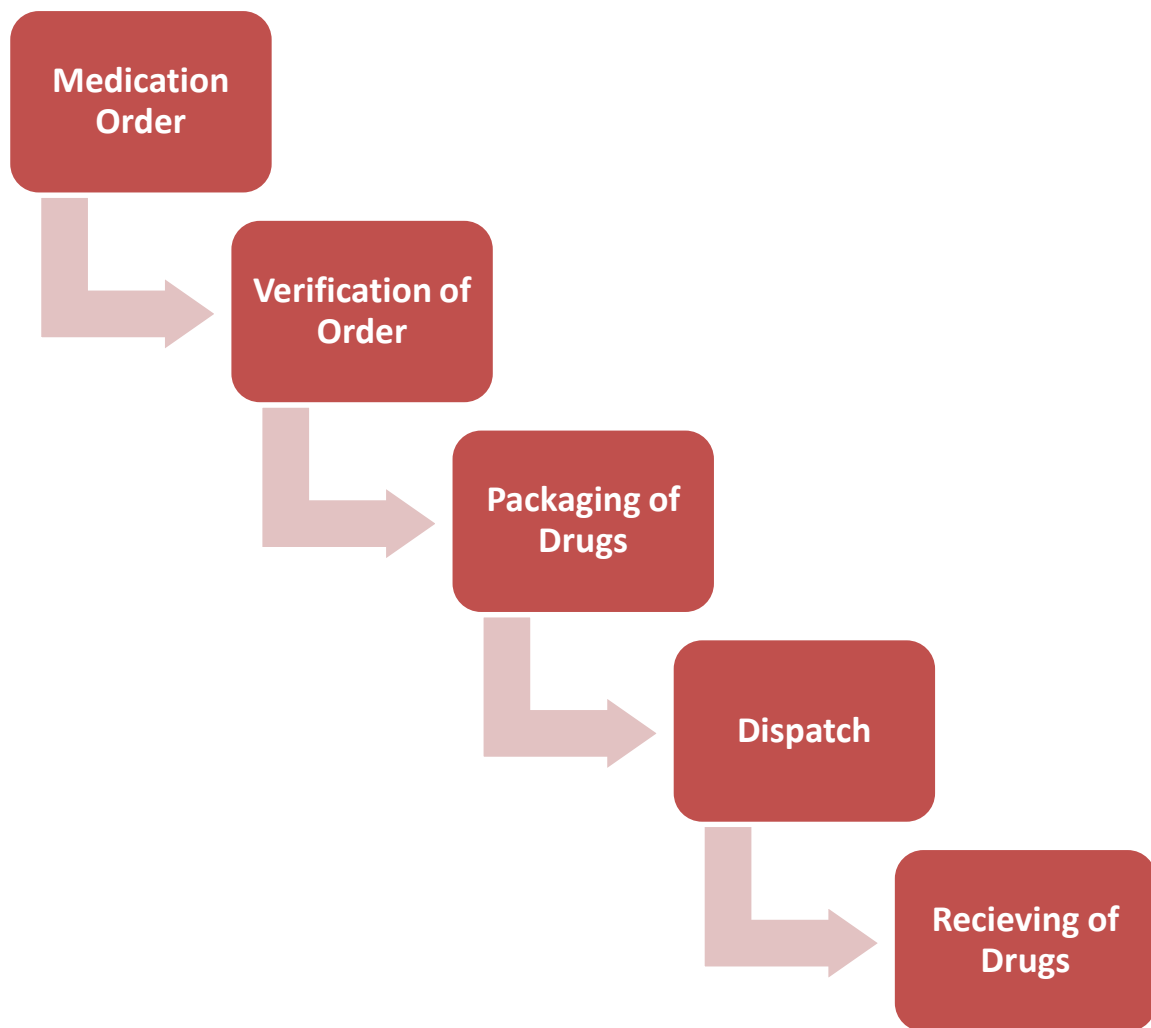
**Step – 3:-** The pharmacists bill the ordered drugs on HIS(Hospital Information System).

**Step – 4:-** The packaging of drugs is being done.

**Step – 5:-** The pharmacists dispatch the medication packages for the floor with the help of GDA.

**Step – 6:-** The GDA will hand over the medication package to Nursing Team leader.

**Step -- 7:-** The Nursing TL will check and update the medication order status.



The turnaround time for distribution of medication is categorised into 3 categories-

| Category  | Delivery Time   |
|-----------|-----------------|
| 1. Normal | 2-3 Hours       |
| 2. Stat   | 30 Minutes      |
| 3. Now    | 10 – 60 Minutes |

## CONCLUSION –

The central pharmacy of Max Hospital, Saket is working quite efficiently and giving up to the mark performance. The supply chain and distribution management is making the in-patient medication a smooth process. But the rapidly changing era always suggests us to make new improvements. We would like to put forward the following

## **RECOMMENDATIONS:-**

### **1. Automated Medicine Dispensing -**

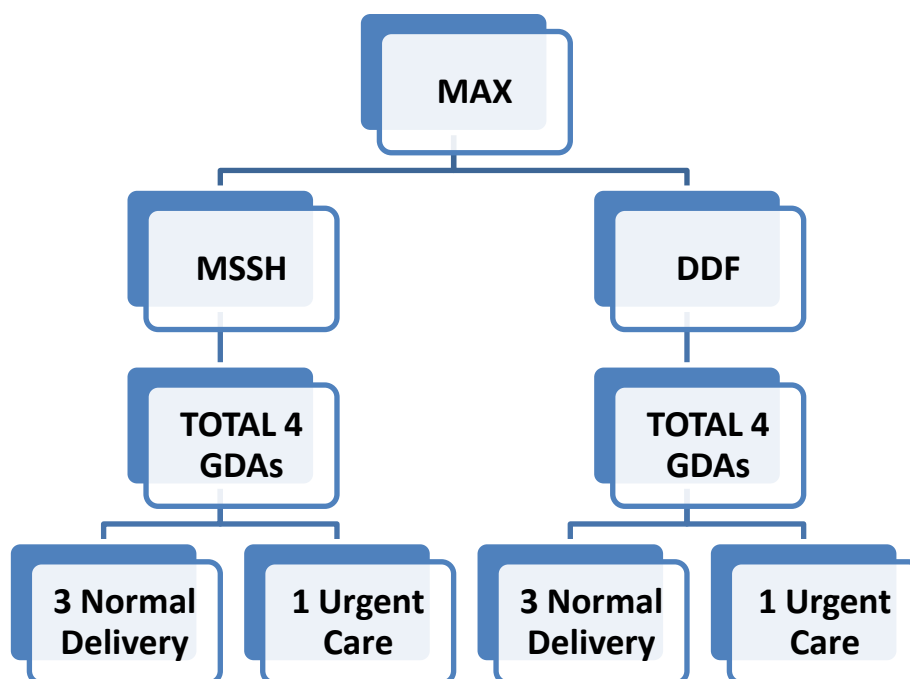
- Technology-based interventions have been investigated as a mechanism to improve medication distribution and reduce medication errors that lead to adverse drug reactions.
- The use of automated dispensing machines has become commonplace in many hospitals, but cost remains a big deterrent for implementation in resource-limited settings.
- The mechanism is founded on a computer interface between the hospital pharmacy computer terminals and the dispensing machines at the clinical ward.
- This system electronically controls and tracks the dispensing of unit doses for each patient based on individual medication profile.
- The dispensing machines allow medicines to be stored on the ward and to be more conveniently accessed by the clinical staff.

### **2. Proposal for new category in Inpatient Medicine Dispensing:-**

- A new category can be introduced in dispensing of Inpatient medicine i.e. New Patient Admission – Category.
- This new category will be for the new patients directly coming to inpatient area.
- A separate timeliness should be prepared for getting the medications delivered on time.
- As soon as the patients get the bed, the medications prescribed by the doctors should be available on bed side.

### **3. Delivery time lining for GDAs :**

Here at MSSH, Saket, we have 5 GDAs for both the buildings MSSH and DDF. We recommend the following process flow with increase in number of GDAs (from 5 to 8).



The following table represents the time lining for 4 GDAs in each building of MAX, Saket:-

| SR. No | CATEGORY      | NO. OF GDAs | NO. OF ROUNDS | TIME TAKEN               |
|--------|---------------|-------------|---------------|--------------------------|
| 1.     | NEW ADMISSION | 1           | As per need   | 30-45 minutes            |
| 2.     | NORMAL        | 1           | 4 per floor   | In every 120-150 minutes |
| 3.     | STAT          | 1           | As per order  | Less than 30 minutes     |
| 4.     | NOW           | 1           | As per order  | 10-40 minutes            |

The same GDA allotted for a particular category can be used for other categories also, if needed.

#### 4. Pneumatic Shoots:-

The Pneumatic Shoots distribution system can be a useful tool for the quick delivery of medication packages.

- The pneumatic shoot system can be installed for each floor and each unit.
- Separate sections of Hospital can receive the medication packages in very short span of time.

- The pneumatic shoots can be used for transportation of other things also like sample for Lab Investigations.

## 5. Information Technology:-

Currently the max hospital, Saket is using two softwares for day to day operations.

1. HIS (Hospital Information System)
2. CPRS (Computerised Patient Record System)

The HIS is being used for all the operations related to Billing, Investigation reports, Bed Management etc. The CPRS is being used for the clinical purposes.

### Problem –

1. There is a problem in working of these both the softwares. Both CRPS and HIS generate the separate identification number for patients. The HIS ID is being generated when patient arrives in the hospital for the first time. If patient comes to MSSH then patient will get a different ID and if the patient comes to DDF then he/she gets a different ID.
2. The complications arise when patients get transferred from MSSH building to DDF or vice-versa. This generation of separate identification numbers is causing a major problem for pharmacy department as well as the other departments also.
3. When transfer of patients occur the medication supply becomes very difficult for both the divisions of pharmacy departments.

To overcome the above mentioned problem we would like to put forward the following suggestions-

1. Hospital should try to create single software, instead of CPRS and HIS.
2. A single and unique Healthcare identification number should be created for every patient. More number of patient identification numbers makes the system ambiguous.
3. Software should be generated to carry out the **Auto Continuation of Medication Orders**.

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## **PROJECT REPORT 5:**

### **TITLE:**

## **MEDICOLEGAL ASPECTS OF BRAIN DEATH DECLARATION**

### **(A Review Study)**

### **INTRODUCTION/BACKGROUND:**

#### **Brain Death Preamble:**

Organ transplantation has been one of the greatest advances of modern sciences that have resulted in many patients getting a renewed lease of life. It was included in the top 5 medical miracles of the last century. Organs can be donated by a living person, after natural death and after “Brain Death”. Brain death is a relatively new concept of death that was first recognized in Paris in 1959.

The concept of Brain death has been plagued with serious inconsistencies and contradictions. The first serious systematic study was undertaken by the Adhoc committee of the Harvard Medical School to examine the definition of Brain Death, which published its report in 1968.

The Government of India recognized this as a legal form of death in 1994 and passed an Act called the “Transplantation of Human Organs Act (THOA)”. This legislation was also enacted to streamline the activities of living transplants especially kidneys. This kind of transplant has achieved considerable notoriety in India with frequent commercial organ scandals where the brokerage for kidneys can be considerable leading to exploitation of the poor in the country. The Government through this Act wished to wipe away this practice by making it illegal and punishable offence.

Through this Act, multi organ transplantation has been possible. After natural death only a few organs can be donated (like cornea, bone, skin and blood vessels) whereas after brain death almost all the organs and tissues can be donated including critical organs such as kidneys, heart, liver and lungs.

#### **What is brain death?**

It is the complete and irreversible cessation of all functions of the brain including the brain stem.

It can be determined in several ways:

- i. No electrical activity in the brain (determined by EEG)
- ii. No blood flow to the brain (determined by blood flow studies)

- iii. Absence of function of all parts of the brain – as determined by clinical assessment (no movement, no response to stimulation, no breathing, no brain reflexes).

In India, brain death is **brain stem death**.

**Causes of brain death:**

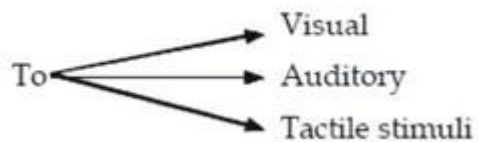
- i. Anoxia
- ii. Ischemia
- iii. Intracranial hematoma
- iv. A gunshot wound to the head
- v. Intracranial Aneurysm
- vi. Brain tumors

**Criteria for Diagnosis of brain death:**

In 1981 –the President's Commission for the study of Ethical Problems in Medicine and Biomedical and Behavioral Research (USA) developed standards for the determination of brain death which with some modifications are accepted worldwide.

Some steps are important to be followed:

- Unresponsiveness



- No communication in any manner.
- Absence of cerebral and brain stem function
  - (-) Absent:
    - Pupillary response
    - Vestibuloocular reflex (Cold caloric test)
    - Oculo-cephalic reflex (Doll's eye movement)
    - Corneal reflex
    - Gag reflex
- Spontaneous movements of limbs & postural responses (Spinal and tendon reflexes may be present)

- Some peculiar movements of upper limbs have been noted to occur in the confirmed brain death patient & collectively are termed 'Lazarus sign'.

This could be confused with postural response. (Hypotension and mechanical stimulation play a role).

#### Apnea Test

- No spontaneous respiration present at PCO<sub>2</sub> level of 60 mm Hg.
- 100% oxygenation maintained by a cannula inserted into endotracheal tube.
- This is consistent with medullary failure.
- Nature of coma must be known
- Some reversible causes must be ruled out
  - Hypothermia
  - Drug intoxication or neuromuscular blockade
  - Shock etc.
- Persistence of brain dysfunction
- Six hours with a confirmatory isoelectric EEG i.e.; "Electro-cerebral silence"
- Twelve hours without a confirmatory EEG.
- Twenty four hours for anoxic brain injury without a confirmatory isoelectric EEG.
- Confirmatory tests (are not necessary to diagnose brain death).
- EEG with physiological brain activity. (False (+ ve) and False (-ve) results may occur)
- No cerebral circulation present on angiographic examination (Principal legal sign)  
"Electro cerebral silence + Non-visualization of cerebral arteries" = Brain death confirmed.
- Brain stem-evoked responses with absent function in vital brain stem structures
- Xenon Computed tomography (CT) scan
- Digital subtraction angiography
- Atropine bolus test
- Transcranial Doppler sonography which records arterial blood flow at the base of brain (TCD)
- 99 mTc HMPAO test (Most promising confirmatory test)
- Single positron emission tomography (PET scan) Best test

### Pediatric Brain Death Protocol:

| Age                                             | Clinical Tests | Interval Between Tests | Ancillary Tests |
|-------------------------------------------------|----------------|------------------------|-----------------|
| New Born (>37 Weeks gestational age to 30 days) | As Adult       | 24 Hours               | If required     |
| 31 days to 18 Years                             | As Adult       | 12 Hours               | If required     |

**Organ transplantation** is a condition when the human organ from one individual is transplanted into the other human for the use by other such individual who himself is having his own such organ failed and non-functional.

Organ: not related to human reproduction (e.g. ova, sperm, ovaries, testicles or embryos)

- It also does not deal with blood or its constituents for transfusion purpose.

### TYPES (MEDICO LEGALLY):

- ❖ **REGENERATIVE TISSUE:** blood, semen, bone marrow, skin.
- ❖ **NON REGENERATIVE TISSUE:** cornea, heart, lungs, liver, kidney.
- Regenerative tissue has fewer problems compare to non-regenerative tissue which are usually donated after the death of the person.

### SOURCES OF ORGAN DONATION:

- **Homologous donation:** organ are relocated to the same body(no legal implication)
- **Heterologous donation:** includes blood or bone marrow. Live heterologous donation extends to paired organ like kidney. (**SWAP Test + Relational** )
- **Cadaveric donation:** only means of obtaining unpaired organ for donation. Here the accurate diagnosis and management of brain stem death is very essential, because organ taken from beating hearth donor have more chance of success.

1: Beating Heart donor.

2: Non heart beating donor;

**Non heart beating donor:** Prior to the introduction of brain death into law in the mid to late 1970s, all organ transplants from cadaveric donors came from non-heart beating donors. Donors after brain dead however lead to better results as the organs were perfused with oxygenated blood until the point of perfusion and cooling at organ retrieval.

Non heart beating donors were generally no longer used except in Japan, Germany where brain dead was not legally or still not culturally recognized.

However, a growing discrepancy between demand for organs and their availability from DBDs has led to a re-examination of using non-heart beating donors. Many centers are now using such donors to expand their potential pool of organs. Tissue donation i.e corneas, heart valves, skin, bone has always been possible for non-heart beating donors.

By providing **ECMO** (Extra Corporeal Membrane Oxygenation) to donors, immediately after death is declared by cardio circulatory criteria can keep organs in their freshest possible condition.

According to Gortmaker et al (1996), most common cause of death is spontaneous/traumatic ICH as a result of RTA.

## **REVIEW OF LITERATURE:**

- The history began with allo-transplantation in 16<sup>th</sup> century with amputation of legs.
- In 1668, first successful bone graft.
- In 1905, first successful corneal transplantation.
- In 1954, Dr. Harrison, Joseph E. Murray, John P. Merrill performed the first successful kidney transplant between identical twins.
- Experiments have shown that Brain stem destruction leads to Brain death as it determines consciousness and ability to breathe spontaneously. However in certain countries like U.K the whole brain including brain stem is considered as brain death.

## **Relevant facts:**

- All over world, Brain death is viewed in different ways in different countries and different laws have been framed likewise.
- In Canada two physicians who are not associated with a transplant team will do the certification of brain death.
- Countries like Spain and Croatia have a donation rate of 32 and 31 per million populations respectively.
- In India, some big cities like Hyderabad and Chennai have the donation rate of 5 and 14 per million populations respectively during last 3 years. The national average though is abysmally low at 0.16 per million populations.
- In India postmortem is not done after sunset unless prior permission has been obtained. If the family wishes to take the body, there can be delay in such a situation, hence it is important to keep the family of donor informed of this possibility.

- In the 15 years, since the THOA was passed in 1994 about 1500 cadaver donations have taken place in India.
- Tamil Nadu has the highest eye donation rate in India – 8000 per year.
- The first successful kidney transplant in India was done in Tamil Nadu in 1971.
- The first successful multi-organ donation and Transplant was done in Tamil Nadu in 1995.
- The highest number of **heart transplants** has been done in Tamil Nadu.
- From Oct 2008 to April 2013 Tamil Nadu has had 339 deceased organ donors resulting in 1895 organs and tissues.( [www.dmrhs.org/tnos](http://www.dmrhs.org/tnos))

### **NEED/RATIONALE:**

We should support organ donations, so that many end stage organ failure patients get new organs to live. We must identify all potential brain dead patients and make sincere efforts to declare brain death and convince relatives for organ donations to save many lives.

Many patient of heart, liver, kidney and lung failure die because they can't get organs from brain dead people. On the other hand we lose many brain dead patients in our ICU due lack of co-coordinated effort, legal issues and poor awareness among people.

At any given time, there are 8-10 brain dead patients in the different ICUs in any major city of the country. We have 140000 deaths from road traffic accidents every year. 67% of these patients suffer from head injuries that lead on to brain death in many instances. We hence have potentially a huge pool of brain dead donors available in India.

This pool of patients can easily meet the demand for organs for our country but also perhaps our neighbouring SAARC countries. It will help in wiping out the shortage of organs and hence the commerce in kidneys, which continues to haunt the country despite the legislation.

Almost, 85% of all transplants done across the world originate from organs from brain dead donors.

South India is doing lot better in legal aspects than north India. More Cadaveric organ donations are happening in south and west India than north India.

### **DISCUSSION:**

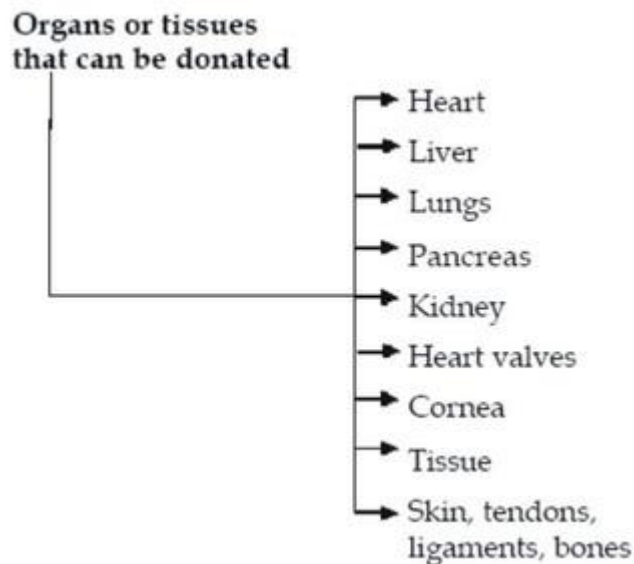
#### **MEDICOLEGAL IMPLICATIONS:**

##### **I. Organ donation:**

Unless damaged by injury or disease, the organ from a brain dead body may be used by another individual through an organ transplant.

In case the family wishes to donate the organs/ tissue, medications are usually continued until the time the patient is declared brain dead. These medications help to keep the blood pressure and heart rate under control and some reduces swelling in brain.

Organ/ tissue transplant offers life or a better quality of life to another person. It gives the donor family the opportunity to help others at this time of tragedy and loss.



**Transplantation of human organ Act 1994 came in to force in 1995 in India.**

Highlights of this act are:

1. Statutory sanction to the brain death concept.
2. Regulation of removal, storage and transplantation of human organs for therapeutic purposes.
3. Commercial dealings in human organs prevented.

**Level of awareness about transplantation, brain death & cadaver organ donation:**

It is extremely low. Only a small number of individuals are aware that brain death is legal in India. Awareness about brain death is especially low among villagers.

Education about various aspects, its immense importance for organ donation and legality of brain death in India needs to be highlighted.

## **II. Removal of life supporting system:**

There is a line of demarcation i.e. when the artificial aids should be stopped so that the doctor may not get involved in the offence of culpable homicide not amounting to murder or one of rash and negligent act, if he has removed the aids indiscriminately. Thus he should first consult with other doctors.

Clinician should make it clear to the relatives that ventilation is not being withdrawn to let the patient die but because continued ventilation is immaterial for a patient who is already dead except in case of organ transplant.

### **III. Other applications:**

Akabayashi & Morioka reviewed the feasible uses of brain dead bodies, especially of dead fetus and anencephalic. They are following:

- Donor for organ transplantation including marrow.
- For storage and preservation of organs for transplant.
- Factory to produce hormones and antibodies.
- For experimentation
  - a. In basic medicine to help determine physiologic functions in human in place of animal experimentation.
  - b. In clinical medicine
    - i. To serve as disease models
    - ii. for use in technological development
    - iii. for use in preliminary test of new drugs
  - c. For education purpose in practical training and anatomic dissection
- Parkinson's disease ( >1 million sufferers in USA)

They may get potential benefit from tissue (Foetal brain tissue) transplantation.

### **Reluctance to accept brain death:**

- Lack of understanding the concept.
- Special emotional attachment to the dead person
- Loss of confidence in medical practice
- Ethical questions related to earlier organ transplant procedure
- Perceived insufficient participation of government and medical associations.

In the last three decades the concept of brain death has evolved and has had judicial approval in many parts of the world like USA, UK, JAPAN, IRAN and SAUDI ARABIA.

As health and education are state subjects this act had to be accepted by various states and passed in their assemblies. So far the act has been passed in most of the Indian states; however there are still a few states that have to accept the act.

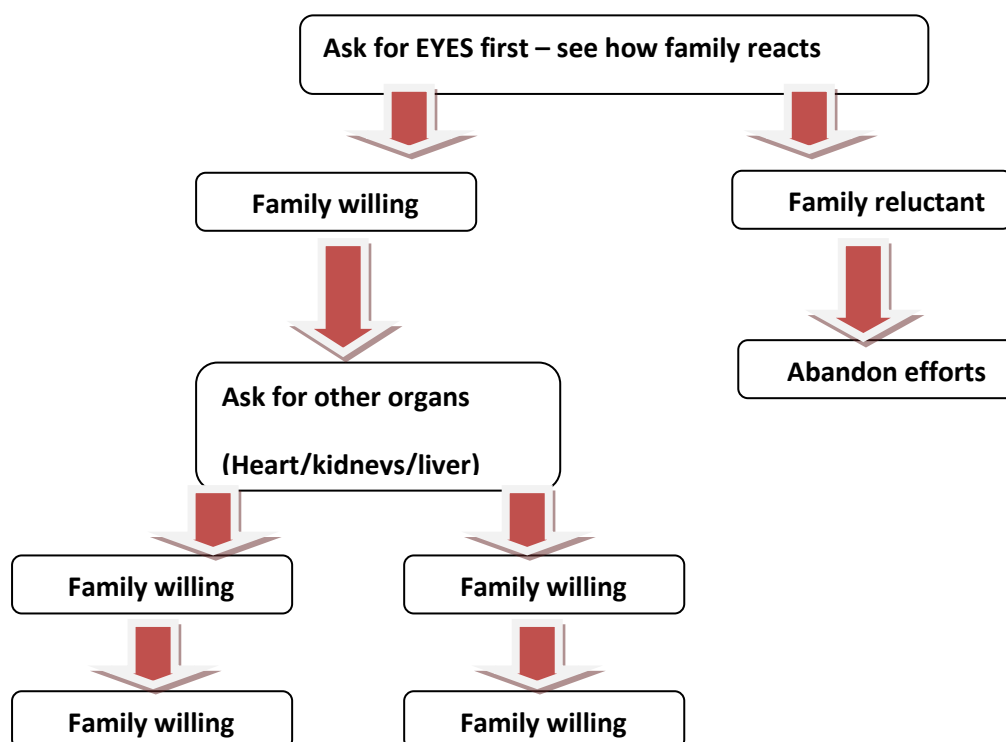
## PREPARATION AND CHECKS BEFORE PROCEEDINGS:

- Consent for organ retrieval and brain death certificate –  
Adult Donor- Form No. 6  
Minor Donor- Form No. 9
- Check Brain Death Certification – Form No. 8 of the THO act.
- All investigations

## The RAMCHANDRA Protocol:

- A survey of 5008 members of the public entitled “The Public Attitude towards organ donation “was conducted by the Department of Urology and Renal Transplantation at Sri Ramachandra College and Research Institute in Chennai.

*“Ramachandra Protocol”- To ask for organs in the event of Brain Dead patient: -*



## NOTE: -

**Grief counselling** and **transplant co-ordination** are important steps which includes:

1. Donor identification
2. Donor screening

3. Donor management
4. Recipient counselling

#### **CONSENTPROCESS:**

- **Opt In System/ Required Request:** - Both in USA and UK, Opt In system is used for consent in which the donor can express the consent to donate organs after death during their life time. Form No 5 of THOA is an Opt in card but even if a brain dead person possesses such form the counsellor/doctor will still prefer asking the relatives an informed consent.
- **Opt Out System/Presumed Consent:** -Countries like Belgium, Austria, Finland, France, Norway, Spain and Singapore follow Opt Out system in which the states assumes that consent for organ donation has been given by the deceased. Exceptions are made in case of minors or if donor wishes not to donate.
- **Mandated choice Law:** - This law requires citizens to declare their choice about organ donation. This can be done by registering with a national body or expressing their wishes during the issue of important documents like “Driving License” or “Passport” or “National Identity cards”. Countries like Sweden and Denmark have implemented this law.
- **Donor Card Concept:** - This is a universal organ donor card for all organs. The next of kin needs to be informed about the wishes of donation. It is one way of putting Form 5 of THOA into action. MOHAN Foundation has been distributing these cards since 1997 and has distributed over half a million cards in India in various regional languages.

#### **BRAIN DEATH CERTIFICATION:-**

- As per the Transplantation of Human Organ Act two clinicians who are experts in the field (like neurologists or neuro-surgeons) is required for brain death certification. Ethically these clinicians must not have interest in or benefit in any way from transplantation of cadaver donor organs.
- They are expected to do two sets of tests six hours apart to certify brain death. One of these two clinicians should be a nominated member from the panel of doctors listed by the State Government for this purpose.
- The legal time of death in these circumstances is taken as the second set of brainstem death tests. The certification should be done on laid out forms as per the act.

- In a medico-legal case a forensic expert is also required for the certification. The medical director or medical superintendent of the hospital should finally countercheck and sign the form (Form 8 THO Act). It is only after this has been done should ventilator support be discontinued or retrieved.

## **ETHICAL ASPECTS OF ORGAN DONATION AND TRANSPLANTATION:**

- 1. Principles of Ethics:-** It includes various ethical questions like :-
  - a. Is there any harm if a dying rich man buys a kidney from someone poor?
  - b. Are they doing it truly out of the love for their patients or are they doing it to charge high fees by helping the needy?
  - c. Should a poor patient who is unable to afford high cost of immuno-suppression be transplanted at all?
  - d. Should patient get a second chance if he/she discontinued immunosuppressive therapy?
- 2. Four Medical Principles:-**
  - a. Respect for autonomy
  - b. Beneficence ( to do good)
  - c. Non-maleficence ( not to hurt anyone)
  - d. Justice ( fair adjunction )

## **THOA 2011 Amendments:**

- i. Tissues have been included under the definition of organ transplant
- ii. SWAP organ transplant has been included
- iii. Mandatory requirement of transplant coordinator in the centre
- iv. Mandatory information to a dead in ICU telling about options for organ donation
- v. Penalty has been increased to 20 lakhs.
- vi. Diagnosis of Brain death made easy by including anaesthetist and intensivist in the category of neurologist.
- vii. No organ donation from mentally challenged person
- viii. Minors cannot donate
- ix. Indian cannot donate to foreigners unless near relatives.
- x. Eye enucleation can be done by trained technicians

### **ISSUES RELATED TO DONOR:**

- Voluntary refusal of life prolonging treatment by a competent adult must be respected
- In untested body organ transplantation, doctor must take every precaution to ensure to rule out the risk of acquiring disease
- Doing/taking organ without the consent(>18 yrs) and that of relative-Unethical
- For the benefit of guardian if consent is given-unethical
- Unethical to go ahead with organ transplant-if the donor is mentally unsound
- Monster, anencephaly-unethical
- Marriage done for organs (kidney Marriage)-unethical
- Mutilating the foetus for benefit of others –unethical

### **ISSUES RELATED TO RECIPIENT:**

- Xenotransplant
- Potential recipient and their relative can be tempted or pressured.
- Blackmail or bribe of living donor to donate
- Unethical to go ahead with the transplantation when the deceased had not consented but after death the relative does.
- Surrogate mother: A possibility of that the fertilized egg is reared as a fetus and infant for the purpose of organ transplantation.

### **ISSUES RELATED TO PROCUREMENT:**

- Commercial trading of organ is an offence

-kidney buyers

-kidney marriage

-human organ shop

-surrogate mother

### **SCOPE OF DECEASED DONATION PROGRAMME:**

There are currently over 300 transplant centers in India doing approximately 3500 to 4000 kidney transplants annually. In India, the total number of fatalities due to road traffic accident in 2011 was 140000 (Ministry of Road Transport and Highways). As per a study done by AIIMS, 67% of them end up in brain death in ICUs. Currently few hospitals are doing well but if properly organized the deceased organ donation programme has the

potential to take care of the majority of the demands of kidneys, liver, heart and other essential organs and tissues.

## **CONCLUSION: -**

Due to severe shortage of organs, the world over has led to increased pressure on the intensive care staff for early identification of the brain dead donor and optimum management of this condition. The diagnosis of brain death as per the Transplantation Human Organ Act is based as simple clinical bedside tests. The passing of this Act in 1994 and its further Amendment in 2011 leads to subsequent adaptation by many Indian States. This has made it possible in India to use the huge pool of patients for organ retrieval and transplantation.

Currently, THOA has put leverage to various legal and ethical challenges which has led to more ease of cadaveric donation. THOA has been implemented in all the states of the country. State level and national level organ registry systems are been formed. Pioneer states like **Kerala (Mritsanjeevani)**, **Karnataka (ZCK- Zonal Cadaveric Co-ordination Committee)**, **Maharashtra (ZCTP)**, **Delhi (NOTTO,ORBO)** and **Tamil Nadu (CTP- Cadaveric Transplant Program)** have started their own cadaveric transplant programmes. **National Organ Donation Day** concept has been put forward. People are accepting **Donation Cards** thereby indicating that the long term goal of THOA is effectively proceeding forward. Various **NGOs** and **Community Participating Bodies** are taking initiatives for the Cadaveric Organ Donation. Inclusion of MLCs has enhanced the organ donation numbers. Brain Dead Committee Formation in hospitals are increasing after THOA amendments. But still the donor pool remains quite small with respect to demand pool. Currently donor pool is limited to brain dead donors only, non-heart beating donors can enhance this pool. Appropriate legislation to this effect will go a long way to increase this pool. Organ bank can be formed at national level for unanimous distribution of the same. National level donor and recipient registry should be formed to maintain the transparency. The provision of separate registration for opt out system can be a good option for national level cadaveric donation program. Separate awareness programs for health sector, doctors, government and non-government organisations need to be implemented. IEC programs should be conducted to educate the masses about organ transplantation and should be given right to choose beforehand. Efforts to legislate presumed consent may be taken up by the government.

The more awareness about brain death and organ donation will lead to a scope of life for so many patients. We need to educate more and more people about brain death. Our Government should make the legal aspects easier for cadaveric donation. Our country is having a huge pool of brain dead organ donor. This pool of patients can fulfill the demand for organ of not only our country but also other countries also.

## **MEANS TO CORRECT ORGAN SHORTAGE:**

- More awareness for the Government and health sector, doctors and NGO.
- General public should be told about organ transplantation and should be given right to choose beforehand.

- Presumed consent should be followed in every state of the country.

## **RECOMMENDATIONS:**

1- Steps should be taken to form a National Network of organ retrieval and sharing. We have to liaison with state authorities and work with them.

2- We should have a national and state level 24x7 Helpline for answer any query and start the process of donation as per the protocol. Most of the state will agree to give one kidney to Max and one to state. Liver and heart can only be used by some centres at present where these treatments are done.

3- We should have state level team for organ retrieval. There should be a liver, kidney and heart team. They should be ready to travel at a short notice. We should have arrangement for travel, instruments and perfusion solution for retrieval and transport facility for the organs to go to the transplant centres. Air India is committed to transport organs free. Other Airlines also do it.

4- We should have our organ allotment criteria as per the national guidelines in new act. We should have our waiting lists, updated every week and available to all the centres for inspection. This may also help in Donor swapping in different centres.

5- We should have transplant co-coordinators in each state and each transplant centres to do all these works as per the guidelines and protocol. They should have communication facilities and contact number of all the relevant peoples, doctors and administrators.

6- Guidelines' and protocols should be available to all hospitals and periodic mock drill is needed to keep it going smoothly

7- We should have political connection to get these things done in each state. We are doing all legal and right things where you need a political help to get things done. There are always problems in doing right things in right way.

8- We should get all our hospital certified for organs retrieval. We should have brain death committee in each hospital so that no organs are wasted.

9-We should also educate all our staff members of all hospitals so that no organs are wasted and consent is obtained.

10-Each hospital should have printed brochure for brain death, organ donations and transplantation. We should have standee for organ donation slogans and display board and screens to promote organ donation. There should be short running film or advertisement to promote such a noble cause.

11-We should start fellowship programme in kidney transplantation now to train more people and later on develop liver and heart treatment fellowship. Such fellowship will help our own organization as well the nation.

12-There should be a regular meeting or videoconferencing in Pan Max group to learn

from each other and improve such programme.

13-We should develop good laboratory facilities especially for treatment related investigations, which will help to do good co-ordination among all hospitals.

14-Non heart beating donor: Prior to the introduction of brain death into law in the mid to late 1970s, all organ transplants from cadaveric donors came from non-heart beating donors. Donors after brain dead however lead to better results as the organs were perfused with oxygenated blood until the point of perfusion and cooling at organ retrieval. Non heart beating donors were generally no longer used except in Japan, where brain dead was not legally or still not culturally recognized.

However, a growing discrepancy between demand for organs and their availability from DBDs has led to a re-examination of using non-heart beating donors. Many centers are now using such donors to expand their potential pool of organs. Tissue donation i.e. corneas, heart valves, skin, bone has always been possible for non-heart beating donors.

By providing ECMO (Extra Corporeal Membrane Oxygenation) to donors, immediately after death is declared by cardio circulatory criteria can keep organs in their freshest possible condition.

Today much greater attention must be given to understanding the public and professional perceptions of brain death. There is strong need to educate both groups and inspire them for Organ donations.

Proper laws should be framed perhaps to assure legal and ethical exemption for those who are unaware and reluctant to accept the concept of brain death.

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## PROJECT REPORT 6:

### TITLE:

### **BILL TILL DATE -- (BTD) -- PROCESS AT MAX SUPER SPECIALITY HOSPITAL, SAKET, NEW DELHI (A DESCRIPTIVE STUDY)**

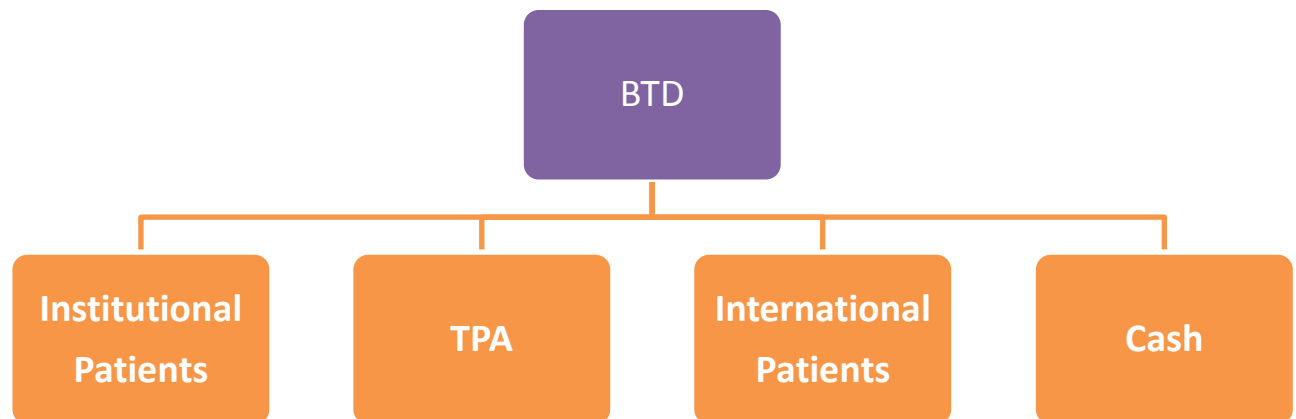
### INTRODUCTION/BACKGROUND:

Today, every corporate hospital has an operational process flow for Admission, Discharge and Billing. The Hospitals work on the principle of generating revenue by providing the cost effective treatments for both hospitals and for the patients. Continuous monetary flow is needed for the efficient running of any hospitals. Back log of large amount of money can lead to the downfall and insolvency of these corporate hospitals.

**Bill Till Date (BTD)** is the process of getting all the pending bills on time and diagnosing the potential threats / dangerous cases for minimizing the future financial risks.

### DISCUSSION:

The process of BTD at MSSH is carried out by the following 4 major ways:-



#### **1. INSTITUTIONAL PATIENTS:-**

In these cases, various PSUs and Corporate companies' employees are included. The only condition is that MSSH should have a tie up with these organizations. The organizations provide a "**Credit Letter**" as guarantee which is valid for a stipulated period of time. So, there is no problem in taking bills from such patients as the organization is responsible for the payments of such bills. In case of extension of stay, authorized letters for pending bill payments are directly sent to the respective organizations. The organizations are responsible for the payments of pending bills.

## 2. TPA PATIENTS :-

Third party payment is quite similar to the institutional patients. Here also the prior permission and initial approval is taken for the bill clearances by TPAs. The only difference is that the part of the payment with regard to exact duration of treatment is provided with the limit. Only the part of the payment with the limits is provided by TPA. If there is hospital extension, TPA does not give the total limit. In such conditions, case summaries are sent along with the estimates to TPAs. TPA provides the limit and once the limit is exhausted further treatment is done as Cash treatment.

## 3. INTERNATIONAL PATIENTS:-

International patients mostly are under Cash payments. Mostly they come via facilitators so the IPS (International Patient Services) department is responsible for BTB of the same. In case the patient does not give money then mark-ups are removed. The share of facilitators is removed and no money is given to them. In this way these international patients are converted into domestic patients. Recovery of them is as same as domestic patients.

## 4. CASH PATIENTS:-

The patients who spend out of pocket expenditure come under cash patients. These are divided into 3 categories according to the pending amount:-

### a. More than 50,000 pending amount (Future Potent threats level 1) :-

Every morning, system generated BTB list comes out and is sent to the managers and higher authorities. All the potential threats have been identified and categorized according to the amount of pending bills. Up to 50,000, it does not come under the list. More than 50,000 pending bills come under this category which can be future potential threats. Managers look after these patients, prepare separate lists and ask for the payments with no written documents.

### b. Up to 1 lac (Future Potent threats level 2) :-

These patients are more risky than the level 1 patient. Here the pending amount is up to 1 lac. For it, formal demand for payment is sent in form of **Demand Letters** to the patient and his/her attendant. Doctors and floor managers meet the family members and attendants of the patient. They explain everything starting from the procedure, further stay, billing details, queries and recall them about treatment protocol. In this way, MSSH tries to remind the patient and their attendants about the pending bills via **both formal Demand letter and via Family Briefing**.

### c. Up to 2 lacs (Future Potent threats level 3) :-

Here the pending bills reach up to 2 lacs. Along with the previous measures taken in level 1, additional measures are taken for recovering the payments. Now the patient is treated like OPD walking patient. Now the medications and Lab Investigations become direct i.e. via cash payment. By this, further payments of new medications and investigations can be recovered. It

becomes crucial issue and Meeting with DMS (Deputy Medical Superintend), Billing managers and Front Office managers are scheduled for reminding the patients and their attendants about the pending payments.

**If no change occurs then following process is being followed:-**



#### **FACTS:-**

1. The overall recovery loss for Max Hospital Saket remains approximately 20% of total billed amounts.
2. Only 50% bills are recovered from TPA and Institutional patients.
3. Patients with long stay and large pending bills are considered as the most dangerous patients for the hospitals.

#### **CONCLUSION:**

Bill till Date process is the backbone of any hospital. Its proper functioning is utmost necessary for the liquefaction of monetary funds. This leads to the fulfilment of all the financial needs of hospital.

For this, identification of weaknesses and continuous monitoring of the system is mandatory. The blockage of funds can cause severe damage to the financial foundation of the hospital. The BTB process at MSSH, Saket is working effectively. But future changes can make the system more effective and efficient.

The shortcomings identified are as follows:-

- Minimal I.T interventions are there. Most of the process of BTB is being done by hospital manpower.
- There is no software which can perform the BTB analysis.

- There is no protocol for system – flagged events. Only human detected events are occurring.
- There are only 2 persons for the entire building who are responsible for the completion of BTB process.

On the basis of above mentioned shortcomings, we would like to put forward the following

#### **RECOMMENDATIONS:-**

- New software should be created exclusively for the BTB analysis.
- This software can be integrated with present HIS for inclusion of such dangerous cases of BTB.
- This system should be able to detect and generate flagged events. The flagged events include any crossing of boundary levels in terms of bill amount.
- The software should have checks on crossing every 50,000 rupees bill amount.
- The software should also be able to perform analysis anytime and print the analysed data as well as reports.
- The system should also be able to create notifications for further steps like organise a meeting, family briefing, legal notice etc.

#### **REFERENCES:**

Hospital data source MAX Super Speciality, Saket, New Delhi.