

**Summer Training at
Paras Hospitals,
Gurgaon**

DMAIC Study of OPD-Front Office

**By
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**Under the guidance of
Dr. Sandesh Kumar Sharma**

**MBA Hospital and Health Management
2015-2017**



**The IIHMR University, Jaipur
2016**

CERTIFICATE

To Whomsoever It May Concern

This is to certify that **Dr. Iha Srivastava**, student of MBA Hospital and Health Management, from The IIHMR University, Jaipur has undergone Summer Training Project at **Paras Hospitals, Gurgaon** from 4th April to 3rd June, 2016.

The Candidate has successfully carried out the study designated to her during summer training and her approach to the study has been sincere, scientific and analytical. This training is in fulfillment of the course requirements.

I wish her success in all her future endeavors.



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PHPL/H.R. – Comm./2016/222

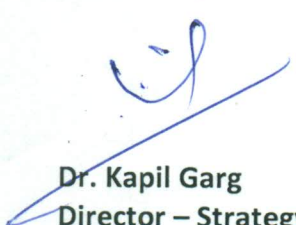
3rd June, 2016

WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Iha Srivastava** has successfully completed her training in the departments of **Operations, Quality** in our organization from **April 4th, 2016** to **June 3rd, 2016**.

During her training period she was found to be sincere, dedicated and efficient in her work.

We wish her all the best for a bright future.



Dr. Kapil Garg
Director – Strategy & Business Intelligence



Acknowledgement

The successful completion of the internship and final outcome of this project required a lot of guidance and assistance from different people and I consider myself fortunate to have so many people around to guide me.

Firstly, I would like to thank **Col. (Dr.) Ashok Kaushik** (Dean Academics and Student Affairs, IIHMR, Jaipur) to provide such a great learning opportunity. I am also grateful to our alumnus **Dr. Kapil Garg** (Zonal Director, Paras Hospitals) for his consent and help in further nurturing our understanding about the hospital and it's working. I respect and thank **Dr. Neeraj Bishnoi** (General Manager- Operations & Quality, Paras Hospitals, Gurgaon) for his invaluable support. The entire project would not have been possible without the important inputs from **Dr. Ranvir. S. Saluja** (DMS- Operations) .

I extend my profound gratitude to **Mr. Hem Bhargav** (Manager-Corporate), IIHMR Jaipur, for facilitating my training at Paras Hospitals. Gurgaon.

I am also thankful to each and every staff at Paras Hospitals, Gurgaon for sharing their experiences and knowledge and providing their precious time to add value to my knowledge. Without their cooperation, the internship and the project work would not have been possible.

Finally, I would like to extend my sincere regards to my mentor **Dr. Sandesh Kumar Sharma** (Associate Professor, IIHMR University Jaipur) for his support and guidance.

Lastly, I would like to thank my college, IIHMR Jaipur, for providing me with an opportunity to learn from and work with the best personnel in the Hospital Industry, and for helping me gain an appreciation of where I currently stand as an administrator and how much work I would need in order to meet the quality specifications that the hospital industry seeks

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List of Acronyms

- AMC-Annual Maintenance Contract
- AHU-Air Handling Unit
- BME- Biomedical Engineering
- CAG-Coronary Angiography
- CCU- Coronary Care Unit
- CGHS-Central Government Health Scheme
- CMO-Casualty Medical Officer
- CSE- Combined Spinal Epidural Anesthesia
- CTVS ICU- Cardio Thoracic Vascular Unit
- ECHS-Ex-servicemen Contributory Health Scheme
- ERCP-Endoscopic Retrograde Cholangiopancreatography
- FCU-Fan Coil Unit
- FMCG-Fast Consuming Consumer Goods
- GDA- General/Ground Duty Assistants
- HCO-Health Care Officer
- HMIS-Hospital Management Information System
- HSEB-Haryana State Electricity Board
- HVAC-Heat Ventilation Air Conditioning
- JCI-Joint Commission International
- LDR- Labor Delivery Room
- MICU-Medical Intensive Care Unit
- NABH- National Accreditation Board for Hospitals and Healthcare Providers
- NABL- National Accreditation Board for Testing and Calibration Laboratories
- NCV-Nerve Conduction Velocity
- NICU- Neonatal Intensive Care Unit
- NSICU-Neurosurgical Intensive Care Unit

- PAC- Pre- Ana esthetic Checkup
- PACU-Post Anesthetic Care Unit
- OTC-Operation theater complex

Introduction

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

During my summer training at Paras hospitals, Gurgaon, there were numerous learning experiences.

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

Chapter1: Overview of the Hospital

Paras Hospitals, Gurgaon is a NABH Accredited 250 bedded super specialty hospital. It was the first hospital in Gurgaon region to get NABH accreditation. Paras is equipped with one of the leading Neuro Sciences centers in the region which boast of all facilities needed for research and surgery in the field of Neurosciences. Besides this it has 55 specialty departments which include medicine, minimal invasive surgery, gynecology, oncology, ophthalmology, dermatology, cosmetic surgery, plastic surgery etc. It has taken a step ahead to start two major projects in state of Bihar, Paras HMRI hospital, Patna has a capacity of 350 beds while Paras Global Hospital, Darbhanga has a capacity of 100 beds, along with a multispecialty venture in New Delhi as Paras Spring Meadows Hospital and single specialty in Panchkula as Paras Bliss (mother-child). Paras Hospitals is also renowned globally for its specialized international patient services. Customized treatments and surgery are designed to benefit international patients.

1.1 Vision

- To become preferred healthcare provider for all.
- Partnership in caring and curing.
- Providing excellent medical care to customers through faith in values, integrity, respect, teamwork and innovation to achieve complete patient satisfaction.

1.2 Mission

- To provide competitive, innovative and accessible medical care to the patients.
- To facilitate improving the health of patient by providing quality service through professionals that is affordable and delivered-
 - Compassionately
 - Appropriately
 - **Responsibly**

- *Efficient*

1.3 Accreditations

National accreditation board for hospital and healthcare providers (NABH) accreditation-Paras is the first multispecialty hospital in Gurgaon to receive this accreditation. Paras Diagnostics is accredited by NABL, India's leading accreditation body pathology services. With a team of highly experienced and efficient staff, it provides services strictly adhering to International Quality standards.

1.4 Paras Hospitals, Gurgaon

- 250 - bedded Multi super specialty hospital, spread over 3 Acres with covered area approx 2.1 Lac sq. ft. spread over 7 stories
- 7 Operation Theaters
- 58 critical care beds
- Region's most Advanced Neurosciences & Trauma Center
- Flat Panel Cath Lab
- 24 Hr ER forms backbone of the hospital services
- Round the Clock one advanced Cardiac life support ambulance and one basic life support with all the life-saving equipment.
- Advanced Mother & Child Care Unit with Level III Neo – Natal ICU
- Fully automated Blood Bank with component facilities and advanced facilities for collection & processing

1.5 Floor wise Facility Distribution

Fourth Floor

- Nurse Stations
- 4A = Neurosurgery Ward (All Room Categories)
- 4B = Surgery Ward (All Room Categories)
- HDU – 8beds

Third Floor

- Patients' Rooms & Wards

- Labor Room (The Bliss), NICU
- Nursing Stations A, B, C and D.
- PICU

First Floor

- Operation Theaters
- NS ICU
- Medical ICU
- Surgical ICU
- CCU
- CTVS ICU
- Post Operative Recovery Room
- Cath Lab

Ground Floor

- Emergency Room with Minor OT
- Radiology & Imaging
- Pharmacy
- Dialysis Room
- Endoscopy Suite
- Doctors' Consultation Rooms
- OPD
- Visitors' Cafeteria
- Urodynamic

First Basement

- Kitchen
- Staff Cafeteria
- Physiotherapy
- IT
- Marketing

- Office- Administration
- Laboratory
- Blood Bank
- Dermatology
- Dentistry
- PHC
- Attendance M/C
- Training room
- IPD billing & TPA
- Quality office
- Corporate department

Second Basement

- Attendance Swiping Machine
- CSSD
- MRD
- Bio medical engineering
- Purchase & Commercial
- Central buying unit
- Morgue
- Parking
- Store
- Maintenance department
- Security
- Clinical research
- IPD Pharmacy
- Linen & Laundry
- Call centre

1.6 Services at Paras Hospital

- Neuro Sciences

- Orthopedics and Joint Replacement
- Mother and Child
- Anesthesiology
- Cardiac sciences
- Dental Surgery
- Dermatology
- Dietetics and Nutrition
- Emergency and Trauma centre
- Endocrinology
- Geriatrics
- Gynecology
- Hematology
- Head and Neck Oncosurgery
- Internal Medicine
- Laparoscopic, Gastrointestinal and Bariatric Surgery
- Neuro, Vascular and Non vascular intervention
- Obstetrics
- Ophthalmology
- Pediatrics
- Physiotherapy and Rehabilitation
- Plastic and Reconstructive Surgery
- Preventive Health Checkups
- Psychiatry and Psychology
- Pulmonary and Critical care
- Radiology
- Renal sciences and Urology
- Rheumatology

Chapter 2: Details of Departments Visited

2.1 Clinical Support Services

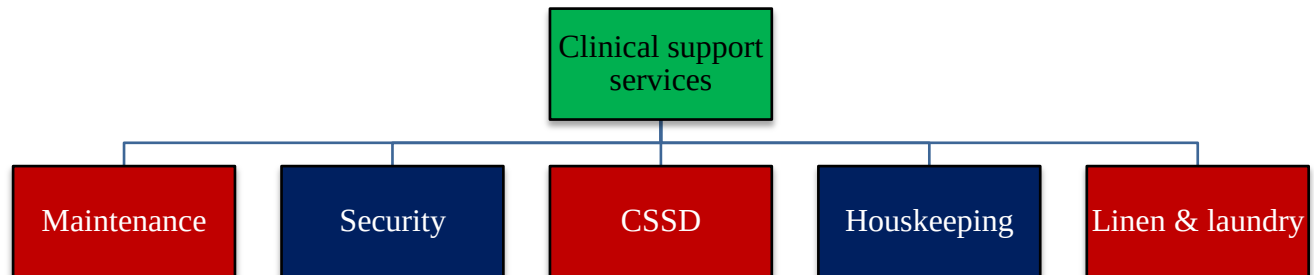


Figure 2.1: Segregation of the Clinical Support Services

2.1.1 Maintenance Department:

Location: Second Basement

Overview:

There are thirteen contractual staff who are experts in different areas of maintenance. There are four employees of Paras hospital in the maintenance department namely Head engineer, Senior Executive, Junior Engineer and the Lift Manager. There are various kind of registers which are maintained by the department with special focus on Operation Theater (OT). These files are as follows:

- 1) OT(temperature, humidity, CFM (cubic feet per minute))
(1 tone=400 cubic feet per minute, used in AC)
- 2) OT complaints
- 3) OT air exchanges
- 4) Complain register
- 5) Daily maintenance rounds
- 6) Handover register
- 7) Ion charger(Chemical to be added to water to prevent scaling)

- 8) Job Card (Used to get a confirmation from the floor manger that the complain is taken care of)

This department is responsible to look after all the infrastructure and non-medical related machines installed inside the hospital. The major domains of maintenance are:

1. HVAC System
 - FCUs and AHUs
2. Electricity
3. Sewage and Water supplies
4. Miscellaneous Maintenance

1) HVAC System

List of machines

- i. Boilers of Aquatic (Thermes) - 30,000L capacity-2
- ii. Chillers of Carrier-185TR-2
- iii. Chillers of Carrier-265TR-1
- iv. Condenser pump of ABB-15KW-2
- v. Condenser pump of Crompton Greeve-15KW-1
- vi. Chiller pump of ABB-15KW-3

HVAC consists of two subparts, namely boilers (used in winters) and chillers (used in summers).

The major work of HVAC is to provide central air conditioning to the entire hospital.

FCUs and AHUs:

There are 51 AHU's (Air Handling Units) which are responsible to absorb the environmental air, recondition it, and resupply to the environment. Meanwhile, there are 161 FCUs (Fan Coil Units) which are responsible to cool the infrastructure by passing air through the chilled water coils (which come from chiller pumps).

2) Electricity

HSEB transmits electricity to the hospital at 1100KVA (3 phase current), which is brought down to 430V , 3 phase 1 neutral current by a step down transformer (Star to delta conversion).

The process is shown below:

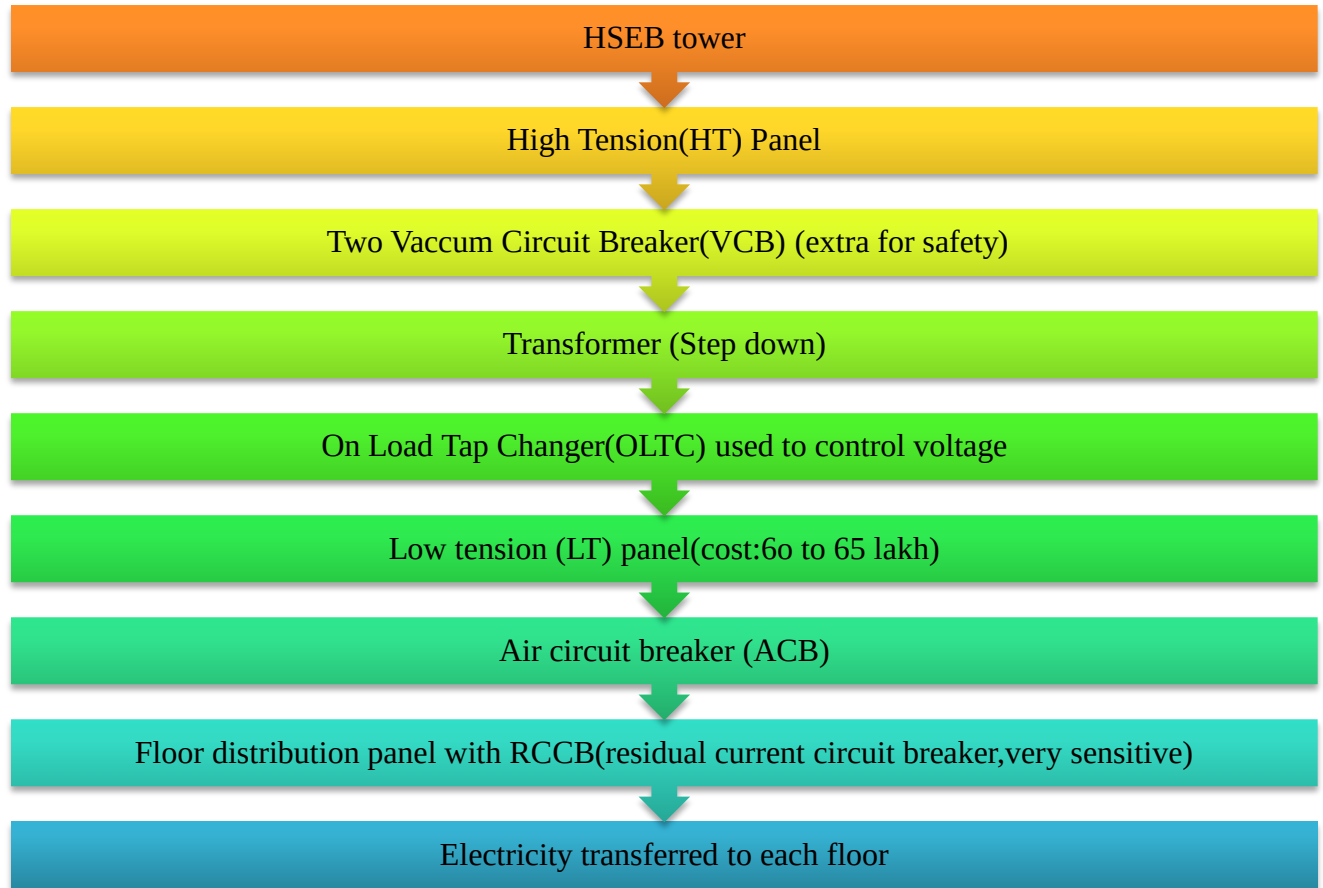


Figure 2.1.1: Electricity transfer flowchart

ACB and VCB (cost: 3-4 lacs) are used as safety device if there is a case of overload on the system. These safety devices break the circuit and save the devices present ahead from overload of electricity. In case if there is a loss in power supply, two diesel generator (DG) of 500V (automatic) and 380V (manual) are used. To prevent uninterrupted power supply during the time

lag of the DGs to work , five UPS are used to power critical services, such as OT,ICU, Computer systems, Security cameras etc. These 5 UPS have the following rating:

1. UPS of power rating 30KVA (2)
2. UPS of power rating 20KVA (1)
3. UPS of power rating 5KVA (1)

In addition, separate registers are maintained for electricity by the department:

1. Transformer reading
2. Daily consumption of electricity based on HSEB meter reading and the time for which the diesel generator were kept working.
3. Generator check list

3) Sewage and Water supplies

The hospital has six tanks of one lac liters each out of which two are for fire safety department and 4 are used for water supplies. The water goes through a water softener and is further pushed into the pipeline with a hydraulic pump and then distributed.

Water is supplied to the hospital by the government and in house bore wells. The water is pumped by a 7hp centrifugal pump with a capacity of 6,000 liters per hour.

The water is softened with the help of a water softening process, which consists of three levels.

1. Water is passed through sand in the first tank of capacity 500 liters
2. Water is made to pass through carbon present in the second tank of capacity 500L
3. Finally, the water is passed through resins that have to be charged from time to time with the help of salt. It takes about 45 minutes to charge the tank.

Once charged the water hardness is checked after 4 hours of working and accordingly the resins are again charged. A 5hp motor is used to run the softener process. The softness is brought down from 100 ppm to less than 10 ppm, which is fit for drinking. In addition, this water for drinking purpose is sent to RO purifier, which further reduces the hardness to about 3ppm. There are two RO purifiers of 250L (used for dialysis) and 500L (used for drinking) capacity.

The water hardness is checked by a liquid kit or also by a hardness strip. The hospital consumes about 3,00,000 liters of water a day.

In case of sewage water, the water is collected from all the floors and then is treated at the STP plant, after which the water is directed back into the sewage pipeline of size 30 inch that has a filter attached to the end. This pipe end into the city sewage pipeline.

Registers maintained for water management:

1. TDS (Total dissolved solid) and water hardness(in parts per million) before and after charging the salt
2. Separate TDS and hardness register for RO purifiers (before and after changing the filter). As for dialysis, the TDS should be less than 50 and hardness less than 3 ppm. For drinking purpose, the hardness of water should not exceed 20 ppm.

4) Miscellaneous Maintenance

The maintenance of the infrastructure and the generic complains of the hospital, right from fixing a chair to fixing the air supply of the OT, are addressed by the department.

2.1.2 Security Department

Location: Second Basement

Manpower:

On Paras Payroll:

- Security Manager (1)
- Security Officer (1)
- Asst. Security Officer (2)
- Head Supervisor (2)

Contractual:

- Security Supervisor (1)
- Security guards(29)

The major responsibilities of the department are:

1) Vehicles Management

Vehicles coming inside the hospital are first checked for potentially harmful substance or device. At the entrance, based on the reason of visit, the security guard makes passes. Parking is separate for staff and doctors, and visitors.

Charges for parking-

30/- for 4 hrs

50/- for 12 hrs

80/- for 24hrs

Vehicles coming in with some supplies or machines for the hospital can be issued two kinds of passes, which are:

- Returnable Gate Pass (RGP)
- Non- Returnable Gate Pass (NRGP)

2) Attendants visiting IPD patients

As per the hospital policy, only one attendant is allowed with the patient for 24 hours and only a maximum of two visitors per patient are allowed during the visiting hours. This is also called the access control of the hospital. All the attendant and visitors are issued respective ID cards, without which they cannot enter the visitors lift.

3) Cameras in the hospital

There are a total number of 48 cameras placed at strategic points within the hospital so that the security officers have a hawk's eye view of the entire hospital and people present in the hospital.

The main display of all the cameras is present in the security office. The camera is always on recording mode and the recordings are saved for 15 days before they get deleted automatically.

4) Maintaining the decorum of the hospital (Mob control)

Some of the emergency codes are mentioned below:

Emergency codes (dial *111)	
Codes	Meaning
Blue	Cardiac arrest
Violet	Violent people
Red	Fire
Yellow	Bio hazard
Pink	Child abduction or person lost
Black	Bomb threat

Table 2.1.2: Emergency codes

These codes are announced by the call center amongst the staff initially so that the staff can take immediate action. After proper action is taken, an incident sheet is filed based on the incident which is then discussed with the top management.

5) Fire Safety and Disaster Management

Fire increases majorly because of three things, namely heat, oxygen and fuel.

There are majorly four classes of fire that can be caught inside a hospital:

- A-Ordinary Combustibles (wood, etc)

- B- Combustible liquids and gas (grease, oil, LPG, etc.) (water will increase this kind of fire)
- C- Electrical fires (caused due to short circuits)
- D – Metals (Dense metal like catching fire)

Types of fire extinguisher:

- ABC powder: It can work for class A,B and C
- CO₂ type: Only for Class B and C
- DCP type: Dry chemical powder (DCP) should not be used in any crowded area as it can have a disastrous effect on people breathing it. This is used for Class D.
- Foam type: On breaking the cartilage in this extinguisher, a mixture of foam and water comes out. This is used for Class A only.

A master disaster management plan has already been planned in case of fire or any hazard. A special Emergency Response Team (ERT) of 40 staff members has been made if in case of any disaster.

The ERT would segregate into smaller teams as mentioned

- Salvage: This team would try to save all the documents and devices, which are of extreme importance such as files, instruments, etc.
- Core Fire: The only work of this team would be to extinguish the fire.
- Rescue: This team would be responsible to save the patients and other visitors to the hospital in case of the fire.
- Cordon Off: As the word suggests, this team would be responsible for preventing access to or from (an area or building) by surrounding it.

6) Dead body shifting from the mortuary

The department has to make sure that anybody that comes in the mortuary, has to be shifted within seventy-two hours otherwise the embalming process has to be done for the body. If nobody claims the dead body then the body is shifted into the district hospital.

2.1.3 Clinical Dietetics Department

Location: First Basement

Manpower:

Paras Payroll:

Dieticians (4)

Contractual Staff:

Cooking staff (12)

Utility workers (8)

Stewards (22)

Introduction

This department is responsible for providing food and beverages as per the need of patients. It is also responsible for setting the menu for the canteen, which is outsourced, for providing meals to staff and visitors of the hospital. For patients, depending upon their condition, meals are provided seven times a day. If the patient is supposed to be on liquid diet than the meals are provided nine times a day. All the meal plans of every patient are made with the help of HIS system that is provided. A separate charge of Rs 400 is levied on the patient as dietician consultation charges. The food distribution is done with the help of food trolleys. Proper hygiene is maintained and quality checks are done on a daily basis. These checks are done with the help of a proper checklist. Every floor has a separate pantry where the food timings and schedules are displayed. In addition, microwaves are kept to heat up the food, if needed.

The department follows a 10 day set menu to reduce monotonicity in terms of type of food served.

The dieticians also plays a major role in bringing back the diet of the patient to normal i.e. Liquid diet to soft diet to semi solid to normal diet. Some surgeries, such as spinal surgeries cannot be performed on obese patients, hence the dietetics department helps patients to lose weight.

There are various kind of diets:

1. Clear liquid Diet
2. Diabetic Diet
3. Potassium restricted Diet
4. Loose motion
5. Chemo or Neutropenic Diet
6. Cardiac Diet
7. Renal diet

For seven meals a day patients, the timings of food are:

1. 8-9am(Breakfast)
2. 11-11:30am(Soup)
3. 12:30-1:30pm(Lunch)
4. 4-4:30pm(Evening tea)
5. 6-6:30pm(Soup)
6. 7:30-8:30pm(Dinner)
7. 9-9.30 Pm(post dinner)

2.1.4 Housekeeping Department

Manpower:

On Paras Payroll:

- Manager (1)
- Assistant Manager (1)
- Head Supervisor (4)

Contractual Staff:

- Supervisor(6)

- Contractual manpower (113)

1) Laundry:

As the name suggests the work of this department is to look after the cleanliness of the hospital. This department maintains 2.25 PAR for bed sheets and 2.1 PAR for patient dresses, which ideally should be between 3 to 4 (1 in use, 1 in laundry, 1 in inventory and 1 as back up) depending upon the location. The ICU should have a higher par in terms of stocking. The laundry service is outsourced to “Royal and Bhushan” and the morning load is given back in the evening and the evening load in the next morning. Cost of towel is Rs5, bed sheet is Rs4.75. Everyday a morning briefing is given to the staff, and the staff is trained in terms of making beds. There is a separate laundry for OT linen that works hand in hand with the CSSD.

2) Turnaround time:

The turnaround time (TAT) for getting a single room ready is 30 minutes and for double rooms 20 minutes. Every floor has its own linen room from where linen is dispensed to the floor. Bed sheets are changed three times a day. Before the room is handed over to the patient, a checklist is signed by the floor coordinator to make sure everything is as per standards. Near the end of every month a physical counting is done.

3) Chemical used for cleaning

For dusting and cleaning of the hospital the R series chemical of Johnson Diversey is used:

Chemical Type	Use
R1	Floor cleaner (multipurpose)
R2 (contains Hypochlorite)	Floor cleaner + disinfectant
R3	Glass cleaner

R4	Wooden Polish
R5	Air freshener
R6	Toilet Bowl Cleaner
R7	Bathroom Tiles
R9	Multipurpose floor cleaning +heavy duty spots
D7	Steel polishing

Table 2.1.4.1: Chemical list of Johnson Diversey

R1, 2, 3, 9 are generally used in the concentration of 20 to 40 ml per liter. In case of heavy cleaning, the concentration is increased to 40 to 60 ml per liter. Italian marble, which is used in public places and is used in the OPD section, needs to be cleaned with low concentration of cleaning chemical because high concentration will remove the polish of the marble. General scrubbing cleans plastic material or ebonite.

In ICUs, a 1% hypo solution is used for cleaning, three times a day. Accordingly, the floor is of ceramic.

4) Biomedical Waste Management

The housekeeping staff collects the biomedical waste in the evening and morning, so that it can be given to the municipal van for final disposal of the waste. During the collection, the area, person disposing and shift is mentioned. The area, where all the BMW is assembled, is divided into 4 separate blocks namely red, blue, yellow and black.

Color Coding	Type of waste	Disposal
Red	Used plastic items, catheters etc.	Autoclave Thrashed Melted (no reuse)
Yellow	Body part or anatomical waste Ex. used gauze pieces	Incineration
Blue	Glass items, sharp instruments	Melted and reusable
Black	General waste	Dumped or incinerated

Table 2.1.4.2: Color coding for biomedical waste

Ideally, the blue bin should be used for unbroken glass. A sky blue bin with a white color lid should be used to dispose off used needles and other sharp objects. Once this bin is closed, it cannot be open. This bin is puncture proof and is directly sent for incineration.

Additionally a “C” labeled dustbin is specially made for contaminated medicine and chemo drugs. In addition, a separate type of green garbage collection bag should be kept to collect kitchen waste. This bag is biodegradable and can be used in the form of compost pit.

Type of Spills

There are two types of liquid spills for which a spill team has been made:

1. Minor spill (less than 30ml)
2. Major Spill (more than 30ml)

In case of minor spill, a personal protection kit (PPE kit) is used. The kit includes:

1. Tissue paper
2. Spatula
3. Yellow garbage collector
4. Thrash newspapers
5. Hypochlorite

In case of major spill, which can be of body fluids, chemo drugs etc. A separate set of advanced kit called HAZMAT kit is used.

This kit includes a lot of different instruments and chemicals. To name a few:

1. Gumboots
2. Goggles
3. Chemical suit
4. Full face mask
5. Absorption pad
6. Spatulas
7. Fiber broom
8. 3kg sand(To make a boundary around the liquid, preventing it from further spreading)
9. Dust pan
10. Old newspaper
11. Yellow Garbage
12. Different chemical set (boric acid, citric acid, Hypochlorite)
13. Steel container

Without the Hazmat team, a hospital cannot get any NABH or JCI accreditation.

The hospital has a separate code for the spill team. The team should ideally include Nursing supervisor, Housekeeping supervisor, Infection control nursing team and housekeeping cleaners. The housekeeping is also responsible for pest control and horticulture for which separate AMCs are given.

2.2 Operation Theatre Complex

Operation Theatre Complex in Paras Hospital is located on first floor with the restricted area for outside visitors to minimize the traffic and to maintain the sterility. Nobody is allowed inside the complex without the management or Doctor's permission. It is also necessary to wear shoe-covers before entering the OT Complex.

OT Complex is divided into different areas:

1. PAC Room
2. PACU

3. CTVS ICU
4. Catheterization Lab
5. Female Doctor changing room
6. Changing room for OT Technicians
7. Common Room for Doctors
8. OT pharmacy
9. OTs (7)
10. Scrub Stations (2)
11. Room for flash sterilization
12. Dirty utility room
13. OT Store Rooms

1) PAC Room

PAC Room in OT Complex is meant for Pre-Operative Evaluation of patients on OPD basis by Anesthetists to check if the patient is fit for surgery. Surgeons to examine the OPD patients in case the surgeon is in OT also use this room.

2) PACU (Post Anesthetic Care Unit)

This unit accommodates the patients before and after surgery. There are six beds in PACU. Patients to be operated are shifted from wards to PACU around 15-30 minutes before.

Nursing staff in this unit check the vitals of the patients and check that the medicines have been given to the patients or not. After the surgery is over, the patient is brought to PACU with the objective to monitor the patients post-surgery. The patients' vitals are monitored every half an hour and if the patient is found stable based on Aldrete scoring mechanism (score should be more than 12 out of 14), anesthetist shift the patient to the ward after the evaluation. Critical patients are directly shifted from OT to ICU for monitoring. Cardiac and Neuro surgery patients are shifted from OT to CTVS ICU and NSICU respectively.

Work force in PACU:

Area Incharge (1)

Staff nurse (3)

3) Catheterization Lab

It comes under the cardiology department. Major procedure taking place within the cath lab are CAG and Percutaneous thrombo coronary angioplasty (PTCA). There are overall 24 procedures taking place inside the Cath Lab. Cath Lab is divided into console room, procedure room and storerooms.

4) Operation theatres

There are seven operation theatres in OT Complex. Based on specialties they are classified as follows:

- OT 1&4: General surgery but urology cases are preferred to be done.
- OT 2: Dedicated to Orthopedic and Spine cases
- OT 3: Ophthalmology
- OT 5: Dedicated to Cardiac surgeries
- OT 6&7: For Neurosurgery

These OTs differ based on different machines and hence different areas. Super specialty branches such as Cardiology and Neurosurgery have almost an area of approximately 20*20 sq. feet. The other OTs are dimensioned around 18 x18 sq. feet.

Equipments in OT:

- High Electronic Operation Tables in each OT, which can be tilted to 12 positions. Along with this, in OT 2 Ortho Table is used whose lower half is detachable and can be connected to Fracture Table in cases such as DHS, etc. In OT 3&5, head end of OT Table is detached and horseshoe is attached to it, which supports the head.
- Anesthesia machine (1 for each OT).
- Laparoscopy machine-1
- Six Microscopes. Two are used in Neuro, one in spine, one in ENT and two for eye surgeries.
- Single Pendant in OT 1, 2 & 4 whereas double pendant in OT 3, 5 & 6.

- Shadow less ceiling lamps (2 in each OT) except Cardiac OT where these are three in number.
- Three patient warmer, used for long cases or if patient is critical. It maintains the body temperature in the range of 35-40 degree Celsius.
- 15 Syringe pumps
- 3 C-Arm Fluoroscopy Machine
- 16 lead aprons and Thyroid shields used with C-Arm Fluoroscopy
- Debrider (1)
- Crash Cart in OT 1&2
- Suction Apparatus, one in each OT.
- Apple recording system: OT 2 & 6
- Patient shifting trolley, three in number
- Lithotripsy: Used to break stones with the help of laser.
- DVT pump: used in spine surgeries.
- Tourniquet machine: To stop arterial supply mainly used in joint replacement surgeries
- Electro diathermy (unipolar & bipolar)
- Navigation machine
- Cusa machine: Used to take out the tumor by vibrating and then aspirating it.
- Heart and Lung machine: To keep the blood circulation in the body normal.
- PHACO machine

Each OT has its own inventory of medicines, injectables, IV fluids, dressing materials, etc. which if used during the surgery, is replaced by the OT Pharmacy.

Outside every OT, there is an alarm called “alarm enunciator” which comprises of four blocks i.e. oxygen, nitrous oxide, medical air, vacuum. If there is any fall in pressure for any of these supplies, the alarm goes off. Each gas supply has a different color-coding:

- 1) Oxygen: White
- 2) Nitrous oxide: Blue
- 3) Vacuum: Yellow
- 4) Medical Air or compressed air -Black

Each OT has four HEPA (High efficiency particulate air) filters and laminar flow is maintained inside the OT. Each OT has uninterrupted Power Supply to support the life saving machines and temperature and humidity monitor to keep track on the required levels in OT. The Normal level for the temperature in OT is 18-22 degree Celsius and humidity is maintained in 45%-55%.

If there is a highly infectious patient, whose surgery is taking place, in that case, disposable mattress, double gloves, face shield mask, eye covered with transparent film and only disposable linen are used. Then after the surgery, Operation Theatre is fumigated.

Manpower:

1. Head of Department
2. Anesthetists (5)
3. DNB students (3)
4. Nursing staff (assisting surgeons) (21)
5. Technicians (assisting anesthetists) (15)
6. Housekeeping or cleaning staff (4- 2 inside, 2 outside)
7. GDA- 4 (2 inside, 2 outside)

Sterilization in OT:

- a. After every surgery, cleaning of floor is done by sodium hypochlorite and bags of the bins are changed.
- b. Different sets of instruments are there for different surgeries. After the surgery, used instruments are washed with 3M and then after drying them they are wrapped in double sheet and sent to CSSD department for sterilization. TAT for unused instrument is 72 hours. In case of any emergency, they are sterilized in autoclave in flash sterilization room. The process for sterilization takes 20-30 minutes.
- c. The Laparoscopic instruments are dipped in Disinfection Soaking Tray containing CIDEX(2% Glutaraldehyde) solution for 20 minutes to sterilize them in case those are needed for the next surgery otherwise they are stored in the Formalin chamber with Formalin tablets.

- d. Once in a week fumigation is done with Lonzagard. Microbial sample is collected before fumigation & is sent to lab and same procedure is performed after fumigation has been done & comparison is done to see the effect of it. Usual timings of fumigation is 45min but once in a week OT has been kept closed for a night. One OT is kept operational in case there is an emergency.
- e. Instrument trolleys are carbolized after each surgery.

5) Scrub stations: Each scrub station has three taps, one is to take out 10% Butadiene and the other two are for water supply (one manual elbow tap and one automatic).

6) Utility room: Utility Room is for-

- 1) Washing soiled linen with sodium hypochlorite
- 2) Washing soiled instruments 3M solution

7) OT pharmacy

OT has its separate pharmacy with the total work force of four. According to the surgeries, pharmacy gets all the required medicines and surgical items ready in a very short period. Once the operation is over, the nurse or technician provides the list of instruments and medicines used, which are then added to the patients bills, rest of the medicines are returned.

8) OT billing

After each surgery, OT charge slip is filled by the circulation nurse and at the end of the day; all the slips are sent to the IP Billing Department

PROCESS FLOW:

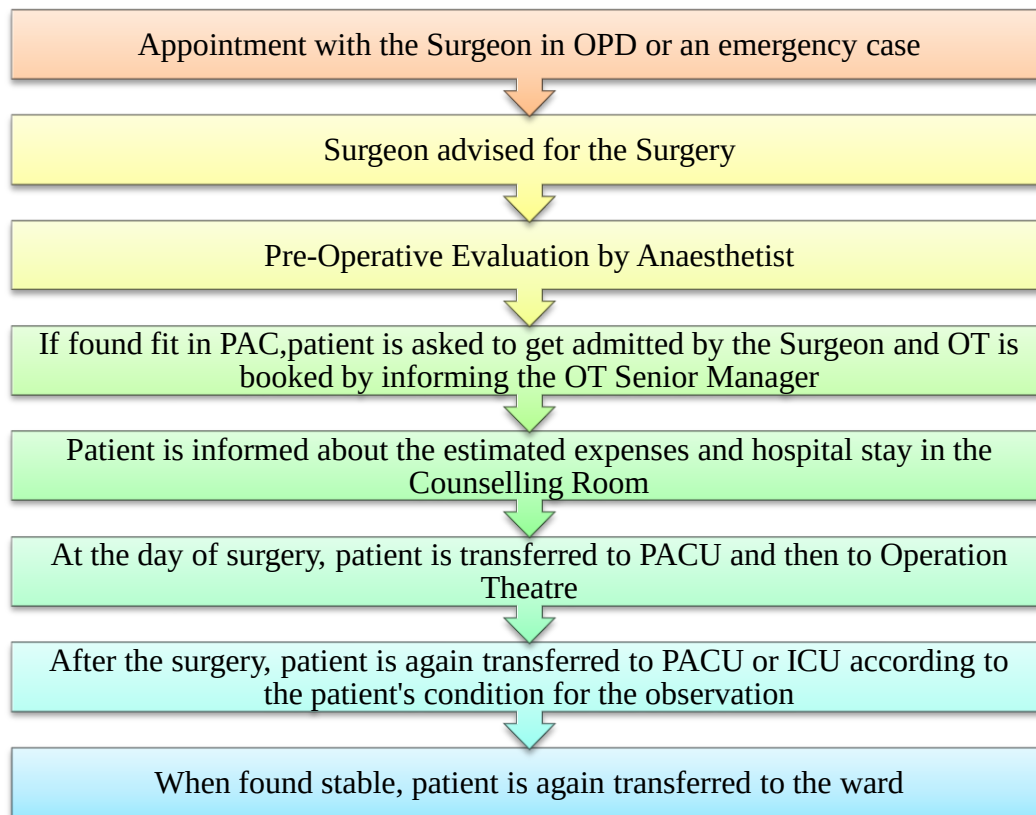


Figure 2.2: Process flowchart for surgeries

2.3 In Patient Department

“Inpatient” means that the procedure requires the patient to be admitted to the hospital, primarily so that he or she can be closely monitored during the procedure and afterwards, during recovery.

1) Type of wards:

- Double room ward
- Four bed room ward
- HDU
- Single room ward
- VIP Suite
- Deluxe Ward

- LDR suits

IPD in Paras Hospital Gurgaon is situated on third and fourth floor of the building.

Fourth Floor

- Nursing Stations A,B,C
- 4A = Neurosurgery Ward (All Room Categories)
- 4B = Surgery Ward (All Room Categories)
- HDU-8 beds
- 4C

Third Floor

- Labor Room (The Bliss), NICU
- Nursing Stations A, B, C and D.
- VIP Suite, Deluxe Rooms
- LDR Suites
- Single bedded Rooms
- Double bedded Rooms
- Four bedded rooms

There are total 82 rooms and 250 beds inclusive of ICU among which functional beds are 219 and 58 beds for ICU.

2) Rooms under different nursing counters:

- **4A Counter:**

The counter consists of both single and double bedded rooms and is completely dedicated to “Neurology & Neurosurgery cases”.

- **4B Counter:**

This counter is specially allocated to “Ortho” department and some beds are for “Oncology” and Surgical cases, and having single, double and 4-bedded rooms.

- **4C Counter:**

The counter is having both single and double bedded rooms and no fixed cases are taken here.

- **3A Counter:**

This counter is having single bedded rooms, Deluxe and VIP rooms and is dedicated to “Medicine” department only.

- **3B Counter:**

This counter consists of single bedded and four bedded rooms and is dedicated to “Medicine” cases.

- **3C Counter:**

This counter consists of only twin bedded rooms and is dedicated to “Oncology” department only.

- **3D Counter:**

This counter is having single bedded rooms and only “Gynecology” cases are taken here.

3) Visiting hours:

Pass 1: One Relative: 24 hrs – entire stay

Pass 2: Other Relative:

10:00 am – 12:00 pm

5:00 pm – 7:00 pm

4) Patient Bed Transfer:

Patients are transferred from one Ward to another Ward due to change in the treatment or change in the Consultant. The charges for different categories of rooms are different, so in case patient’s room category is changed during transfer, then policy for Billing is as under:

- a) Stays up to 8hr: Half day room rent is applicable
- b) Stays more than 8 hr: Full day room rent is applicable

5) Cleaning of rooms and floors

Room cleaning is done 4 times a day.

- 1. Morning: 8 am, 11 am
- 2. Afternoon: 4 pm
- 3. Evening: 8 Pm

6) Discharge process:



Figure 2.3.1: Discharge process flowchart

Dimensions of Room:

- Single bedded Room (including the Washroom): 15ft x 9ft
- Patient Bed: 6ft x 2.5ft
- VIP suite: Room Area: 15ft x18ft
- Double bedded Room Area: 15ft x10ft

- 4 bedded Room area: 18ft x 15ft

7) Layout of rooms:

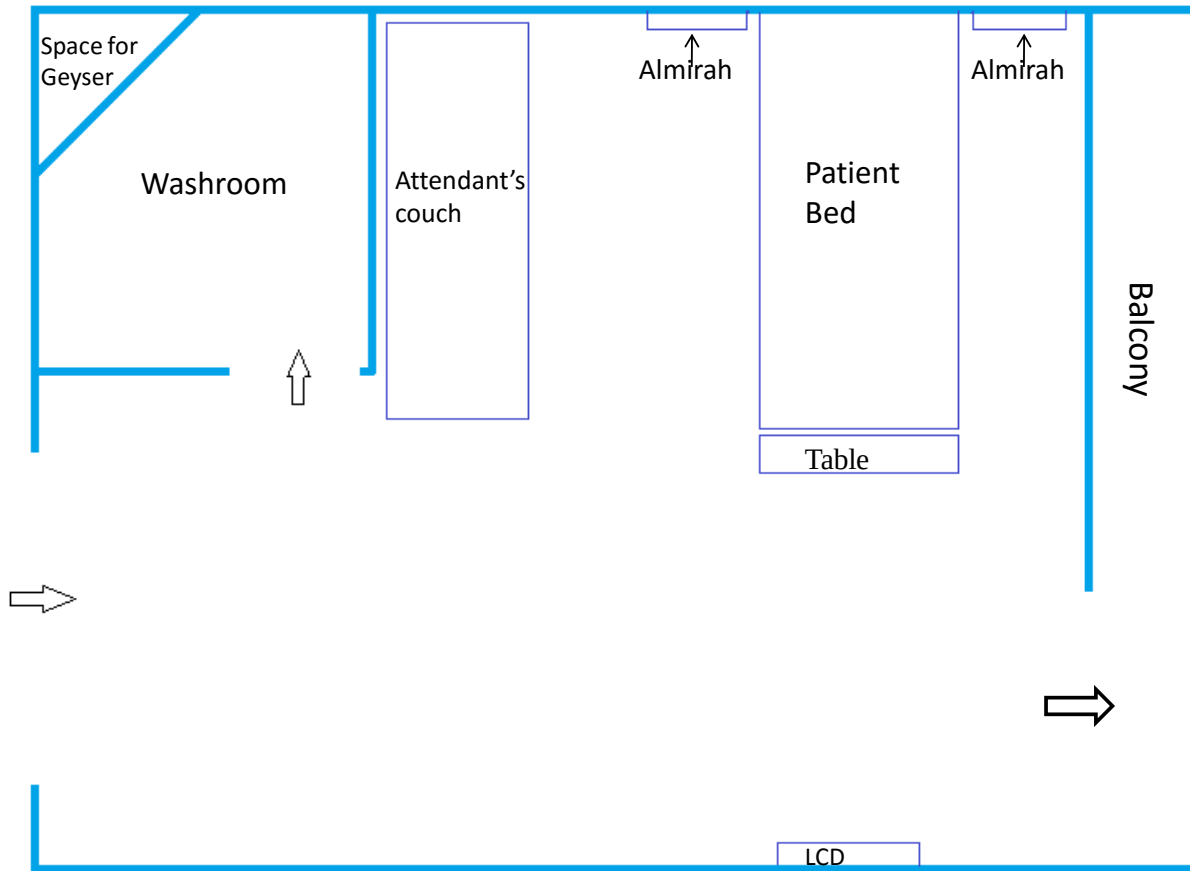


Figure 2.3.2: Single Bedded Room Layout (Block Arrow represents Doors)

2.4 Intensive Care Unit

Intensive care units (ICUs) provide intensive care (treatment and monitoring) for people in a critically ill or unstable condition.

Paras Hospital has **seven ICUs**:

1. CTVS ICU: For patients admitted for Cardio Thoracic Vascular Surgeries or critical Cardiac patients.
2. Surgical ICU: For patients who have undergone surgeries or trauma patients.
3. CCU: For patients who are admitted for invasive procedures in Cath Lab.
4. MICU: For patients with Medical conditions
5. NSICU: For Neuro patients
6. PICU: For Pediatric patients
7. NICU: For care of Neonates after delivery.

1) Admission Process in ICU

In ICUs patients get admitted via OPD, IPD or Emergency.

2) Discharge process from ICU

Generally, patient is stepped down to the ward if the condition gets stable and then discharged. In some cases, if patients' relatives want to take the patient against the Doctor's advice, then they are given LAMA (Leave against Medical Advice).

3) Equipments used & care in ICU

Major Equipments used in ICUs:

1. Ventilator
2. Monitor
3. Crash Cart
4. Air beds to prevent Bed Sores
5. BIPAP

In each ICU, Bed Panels are there for each bed through which medical air, oxygen, vacuum for suctioning is supplied.² Portable machines are also dedicated for ICUs, mainly for the Chest X-Rays of the bed-ridden patients.

In case of infectious patients, nurse-to-bed ratio is one with separate gown for the Nurse and Doctor who sees that patient. For infected patients with Respiratory diseases, double mask are given to the patients to wear to control the spread of infection to other patients and ICU staff. Identification to Infectious patient is by 'Barrier Nursing' or 'High Risk patient' Tag.

4) Nurse-to-bed ratio

For ventilated patients, nurse to bed ratio is 1:1

For non-ventilated patients, nurse to bed ratio is 1:2 or 1:3

5) Temperature in ICU

In each ICU, temperature is maintained between 22-24 degree Celsius; reason being bacteria and viruses cannot thrive at lower temperatures.

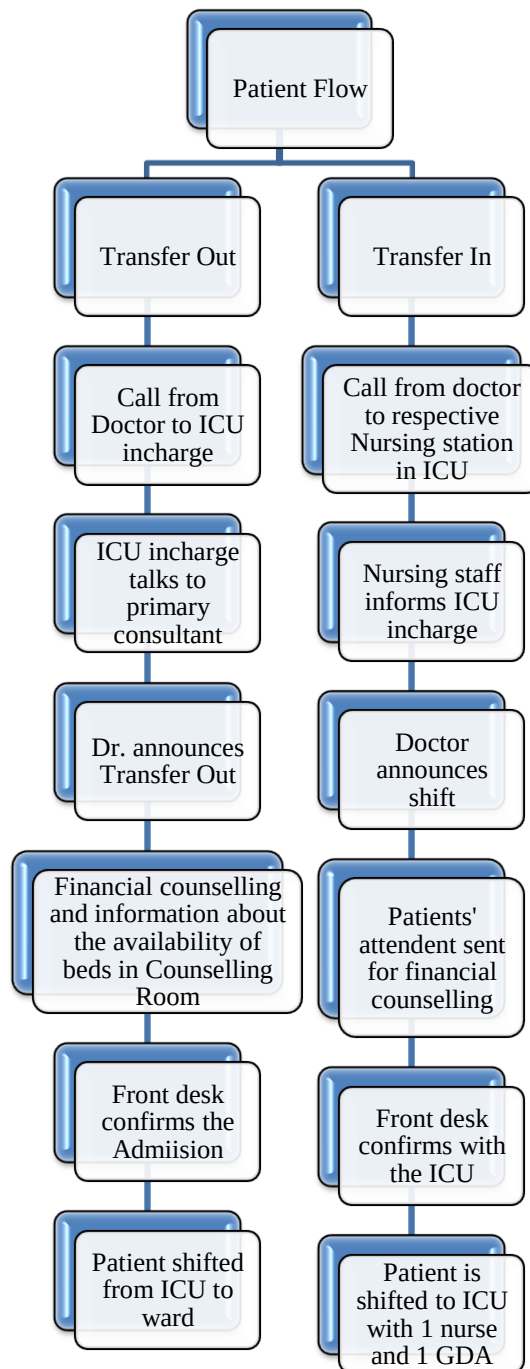


Figure 2.4: Transfer In Transfer out process chart

6) Infection Control in ICU

- ✓ Hand washing
- ✓ Floor cleaning with Sodium Hypochlorite.
- ✓ Proper Biomedical waste segregation.

- ✓ Not more than 3 antibiotics
- ✓ Fumigation once in a month.
- ✓ Used items such as Ambu Bag, etc. are sent to CSSD for sterilization.
- ✓ Use of Gowns, shoe covers and masks inside the ICUs.
- ✓ After each Transfer Out or Discharge, bed is carbolized with sodium hypochlorite.

7) Food & beverages

Patients' diet is decided by the doctor by consulting the dietician.

8) Store rooms

Each ICU has store room where medicines, injectables, etc. are kept for the need of the hour.

Generally medicines for the patients are called from IP Pharmacy through Drug Requisition in HMIS. On Daily Basis, each Nurse is assigned to check the items of the store for its expiry date.

9) Manpower & shifts

Senior Area Incharge (8:00am-4:30pm)

Area Incharge (12:00pm-8:00pm)

Staff Nurses

- Morning shift-8:00am-2:00pm (3 staff nurses)
- Evening shift-2:00pm-8:00pm (2 staff nurses)
- Night shift-8:00am-8:00pm (2 staff nurse)

10) Different Areas in ICU

- Patient Area
- Nursing Counter
- Store Room
- Utility Room

Specific to NSICU:

Neuro Surgical ICU has an isolation room which is mainly for highly infectious patients negative air pressure is maintained in this so that infection does not spread.

Specific to CCU:

Patients in CCU are admitted mainly for the Angioplasty or other Cath Lab Procedures. Before patient is sent to Cath Lab, below mentioned things are looked after:

- Part Preparation of Radial and Femoral site.
- Surgery Billing & Completion of Consent Forms
- Investigations, mainly kidney Investigations are done because the dye given during the Cath Lab Procedure can affect kidney.
- It also records the vitals for upto 72 hours.

Specific to PICU:

Pediatric ICU mainly caters children of age 1 month to 15 years. It is 8-bedded ICU.

Specific to NICU:

NICU mainly caters to the neonates of less than a month. Only low-birth weight babies are treated in NICU for upto 3 months. NICU is divided into 2 areas: One is for outside patients and another is for inside patients. There are total 9 beds in NICU, 3 for the outside patients and 6 for the inside patients.

In NICU, admissions are mainly due to Pre-term, meconium aspiration or Low Birth Weight.

Patients in NICU are treated according to the Level of care needed:

For Level 1- only patient warmer is used.

For Level 2- patient warmer, monitor, syringe pump & phototherapy is used.

For Level 3- patient warmer, syringe pump, monitor & ventilator is used.

Equipments used in NICU-

- Neonatal warmers-9, which maintains the temperature between 36-37 degree Celsius.
- Phototherapy unit -4
- 3 ventilators- 2 Pediatric and 1 adult
- 6 oxygen hoods- to supply the oxygen to the patient
- Nasal prone, for patients with high respiratory distress.

11) Visitor's Timings in ICUs

Morning- 10:45am-11:00am

Evening- 5:45 pm-6:00pm

2.5 IP Pharmacy

IP Pharmacy majorly caters to IPD, OT pharmacy and Emergency department.

1) Manpower

- Head of Department: 1
- Deputy Manager: 1
- Assistant Manager: 1
- Executive: 2 (store)
- Senior Pharmacist: 4
- Pharmacist: 9
- Pharmacy asst.: 5

2) Emergency Drugs:

A total of 35 critical life saving drugs and 48 high alert drugs are kept. High alert drug such as chemo drugs are those which need to be handled with care and prevent breakage etc.

Look alike and Sound alike drugs are kept in a different shelf and are marked as look alike and sound alike so that a person dispensing any of these drugs is more alert.

3) Drug Ordering:

Bulk orders are given on Tuesday and Friday but still depending on the stock at hand the department can put an indent every day. The ROL (Re order level) has a minimum stock marked for 7 days and a maximum for 15 days.

4) Medicine Expiry:

Every month in the last week, the IP Pharmacy staff checks the medicines which are three months before the date of expiry. Medicines found in that category are collected and returned to the respective vendor. Surgical device and vaccines can be kept before 6 months of expiry after which they are returned.

5) Legal Norms:

Forms 20 and Form 21 certify the pharmacy by the government to dispense medicines. As of now the pharmacy has three licenses issued in name of four people. Anyone of the four is expected to be at the hospital at all times.

For a person to qualify as a pharmacist, he or she is at least expected to have a Diploma in pharmacy. Also each pharmacist is expected to have a valid registration with the pharmacy council which has to be renewed every year. To stock narcotics, a separate permit is also required.

6) Storing the drugs:

Drugs are stored based on alphabetical order and are segregated based upon the types.

Procurement of Medicine:

Everyday an indent can be put in if some new medicine is being prescribed by the doctors or if the store does not have a set of medicines. Bulk order days for pharmacy are Tuesday and Thursday.

7) Manual Prescriptions are used for the following cases:

1. Medicine for emergency department
2. New admission in the IPD
3. Chemo Drugs

4. Urgent drugs
5. Non available drugs.

8) Adverse reaction:

In case of an adverse reaction of any medicine, an adverse reaction form is filled by the doctor and the batch no. of the medicine is noted. All the drugs of the batch are discarded from use and returned back to the vendor with the documents mentioning the reason.

9) Processes Taking Place in the Pharmacy

Medicine Dispatch:

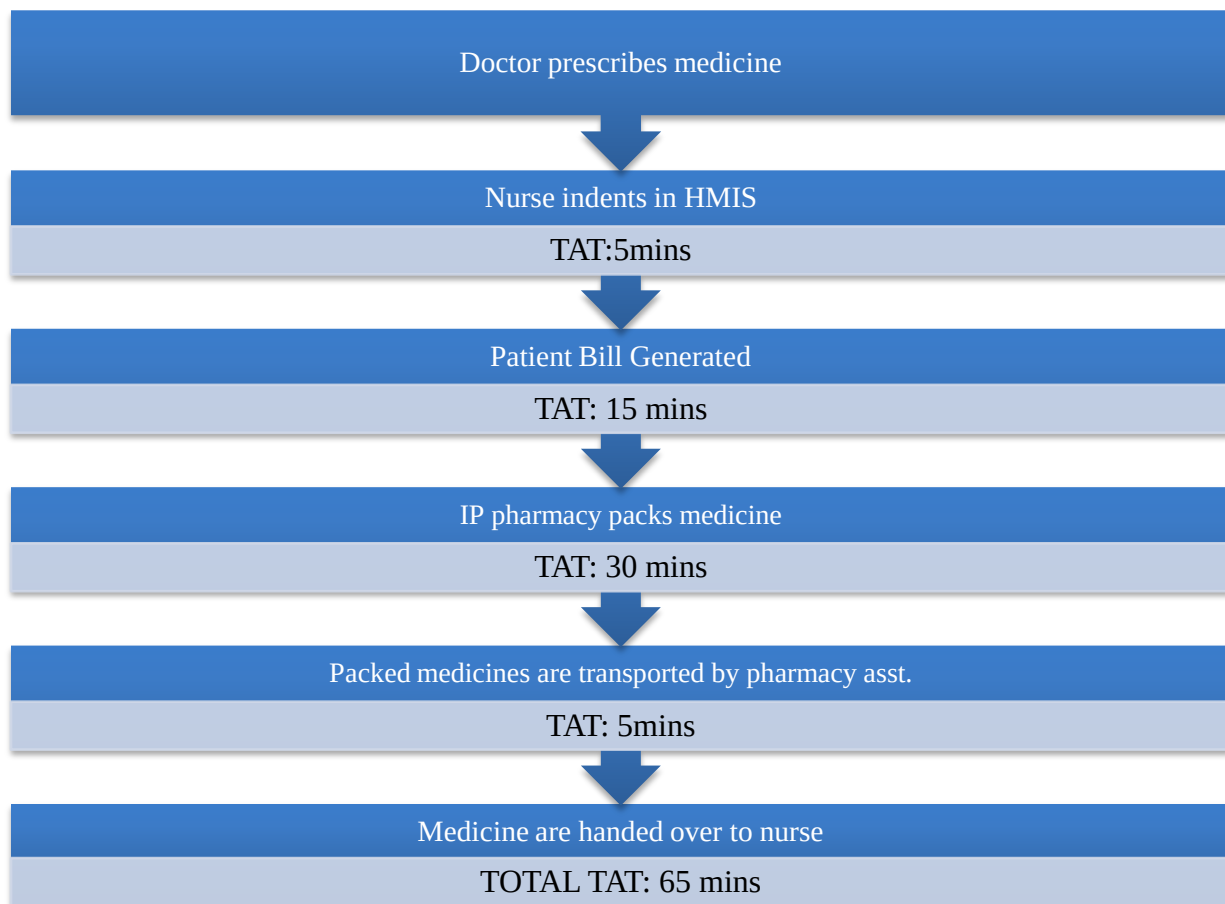


Figure 2.5.1: Process flowchart of medicine delivery

Medicine Return:

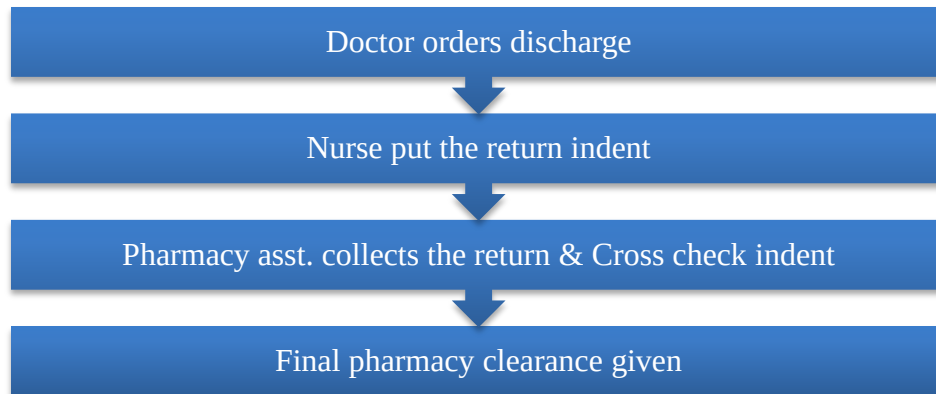


Figure 2.5.2: Medicine returns process

The standardized hospital TAT for the above procedure is 40 minutes.

In addition, medicine is returned against a credit note or cash in the form of cheque from vendor.

2.6 Central Sterile Supply Department

It is responsible for providing seamless supply of sterilized instruments and other devices to the required departments for the smooth working of the Hospital along with maintaining the sterility. The aim of CSSD is to reduce hospital acquired infection level to zero.

1) Structure of CSSD

CSSD is divided into 2 areas: **Sterile and Unsterile Area**. Unsterile area is for receiving the unsterile supplies, washing and packing them to proceed for sterilization whereas sterile area is to store the sterile items to avoid any kind of contamination. In the unsterile area, gauze pieces and gamzee roll (of half metre size) are also made for wards and OT which then is packed and sterilized in the Autoclave. For OT, set of 10 gauze pieces are packed together with a single piece of 8 layers and of size 10 by 10 whereas in the ward, a set of 4 pieces are packed with a single gauze piece of 12 layers and of size 7.5 x 7.5

2) Areas where CSSD supplies are required

- OT& ICU
- Nursing counters & OPD

Issuing of sterilized materials are done 2 times a day from the Issue Counter in the sterile area.

Receiving & Issue Time-

Morning- 9am-10am

Evening-3apm-4pm

Night-9pm-10pm

For sterilization of metal instruments, firstly Ultrasonic machine is used for disinfecting the instruments with Rapid-multi enzyme cleaner(10 ml/liter) and a chemical-Neadishter Iar (10ml/liter) to prevent the instruments from rusting. This takes 15-20 min. to complete the procedure. After completion of the procedure, instruments are washed in running water and then dried. Then these are packed in sets in a double sheet. Finally, the packed sets are autoclaved at a temperature of 132-134 degree Celsius and 15 lb pressure. The process takes 40 to 50 minutes. Autoclave in CSSD has double door with one door opening in the non-sterilized area from where non-sterilized items are moved to the autoclave and another door in the sterile area.

For sterilization of plastic and rubber items, ETO sterilizer is used. It has an inbuilt tray for the items. It uses Ethylene oxide gas for sterilization which comes in the form of 100ml cartridge. A single cycle takes 10 hrs 20 minutes

3) Process flow

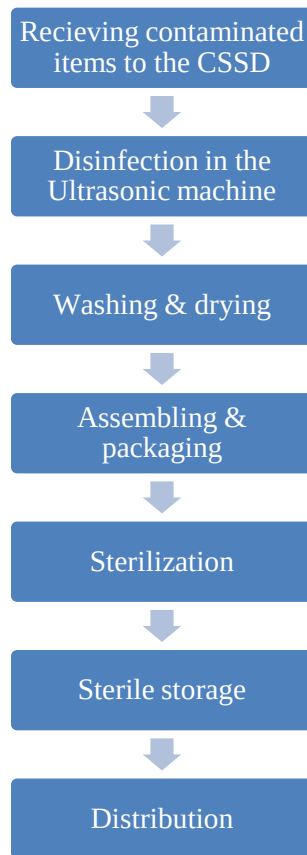


Figure 2.6.1: Flowchart of CSSD sterilization

4) Indicators of sterilization

Two types of Indicators are there: Chemical Indicator and Biological Indicator.

Chemical Indicator is an adhesive tape which is adhered to the packet which after the procedure turns its color indicating the process of sterilization has completed. For Autoclave, Green color turns to Black and for ETO, brown color turns to Green.

Biological Indicator-. Biological indicators are used to confirm autoclave's killing efficiency. A kit containing *Bacillus stearothermophilus* (for steam sterilizer) and *Bacillus Subtilis* (for ETO machine) is kept inside the machines; the machines are run for their actual processing time. Then the kit is sent to the lab to identify if the bacteria died or not. After this, the machine is declared

fit to run. This test is performed on weekly basis, every Tuesday. Investigation of this test takes 48 hrs.

Other tests to ensure functioning of CSSD Equipments:

For every load, **Steam sterilization Integrator** is also used in both Autoclave and ETO which resembles a strip and changes its color indicating the successful procedure. In case of Autoclave, color changes from White to Blue and in ETO, color changes from Yellow to Green.

Bowie-Dick test or DART (*Dynamic air removal test*) is performed every morning before starting any procedure. A strip is placed in the Autoclave for 15-20 minutes, after which its color turns from Blue to Pink. This test is for checking prevaccum autoclave's air removing ability and steam penetration.

Fumigation every week on Monday Night.

5) Manpower

CSSD Incharge

4 Technicians

6) CSSD Layout

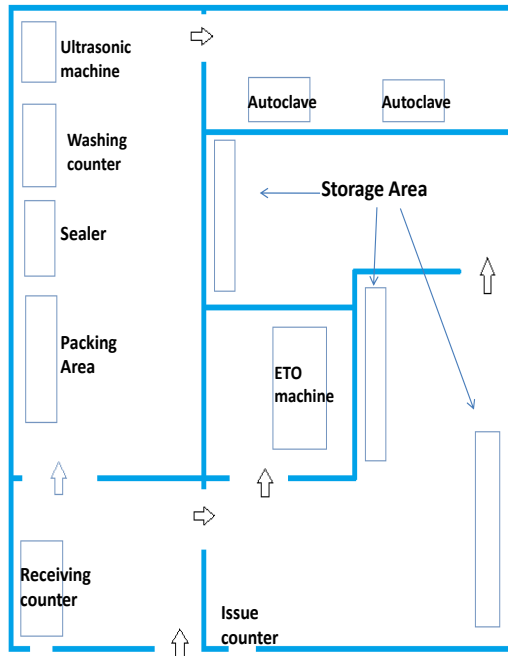


Figure 2.6.2: CSSD layout

2.7 Blood Bank

Paras Hospital has its own Blood Bank for the need of the hour. Two types of donors come here- one is Voluntary Donors and the other is Donors for Replacement of blood.

Voluntary Donors: Voluntary Donors are those who donate blood according to their own will.

Donors for Replacement of Blood: If a patient, whether OPD or IPD needs blood transfusion then it is to be replaced by a replacement/family donor.

1) Criteria for donor

- A donor can donate blood after every 3 months.
- Age should be between 15-65 years.
- Have minimum of 45 kg of wt.
- Have Hb count of 12.5 gm%

- Should not be on any regular medication.
- Should not have consumed alcohol in 24 hrs.

2) Legal bindings for blood bank

- Drug Controllers are authorized to issue the licenses (validity-5 years) for Blood Banks
- It shall be consisting of a room each for –
 1. Registration and medical examination
 2. Blood collection
 3. Blood component preparation (maintain temperature between 20° c to 25°c)
 4. Laboratory for blood group serology.
 5. Laboratory for blood transmissible diseases
 6. Sterilization & store room

From here, blood is issued to the IPD or OPD patients after following the concept of ‘First in First out’.

They have maintained Issue Register and Master register where they keep the records of the donors & patients whom the blood is issued.

Cross-Matching/Serology Lab

Centrifuge machines (2)

Incubator (1)

Bleeding Room

Here the donor’s blood is collected after he matches the criteria. Blood is collected in single bag, double bag and triple bag depending upon the requirement of component. Blood collecting bags have an anticoagulant –CPDA (Citrate Phosphate Dextrose Adenine) to prevent blood coagulation

Quantity of blood taken per donation:

- Single Bag- 350ml
- Double Bag- 450ml

- Triple Bag-450ml

If collected blood is infected, it is discarded after injecting 5ml hypochlorite into it, then autoclaving it for 20 min., discarded into red bag and sent to BMW for incineration.

Apheresis unit

This unit is for Platelet collection. It has 3 machines- one is old and two of them are new. The procedure takes 50-60 min and 6 units collected from Triple Bag is equal to 1 unit of Platelets extracted from Apheresis. The pack made thereafter is also known as Apheresis/Jumbo Pack/Mega Pack/SDP.

SDP is collected as and when required.

Whereas RDP collected from 1 unit of blood consists of 4000-6000 platelet count, SDP collected as a result of Apheresis yields 30,000-40,000 platelet counts.

After collection of blood and platelets, post-donation tests are performed:

- HIV
- HBsAg
- HCV
- VDRL
- MP

Component Room

Component Room is for making the blood components. In case of Double Bags, blood collected is centrifuged at a speed of 3600 RPM to separate Packed cells and plasma. In case of Triple Bags, two spin is required. In the first spin, whole blood is centrifuged at a speed of 1600 RPM which separates the plasma and in the second spin at a speed of 2398 RPM, RBCs and platelets is separated.

1 unit FFP- 150-220ml

1 unit RBCs (if made from Double Bag)- 280-320ml

1 unit RBCs (if made from Triple Bag)- 320-370ml

Types of Blood components:

- Whole blood
- PRBC (packed red blood cell)
- FFP (fresh frozen plasma)
- Platelets concentrate
- Platelets Apheresis (SDP)

Sterilization Room

In this room, one autoclave and oven is kept.

This room is specifically to discard the Reactive and unused blood.

Process for discarding the Reactive blood-

10ml of 5% hypo. is injected into the bag and Kept for half an hour. After that autoclave for 20 min.

And then Discarded to BMW (Red Bag)

For the unused or expired blood, process is same except 5ml of 5% hypochlorite is injected into the bag and stored for 5-10 min before autoclaving.

4) Manpower

- Blood Bank In charge (1)
- CTO- Chief Technical Officer (1)
- Male Nurse (1)
- Technicians (9)
- GDA (2)
- Housekeeping staff (1)

4) Expiry and shortage of Blood Components

Expiry of Blood components is checked on daily basis and before 7-10 days of expiry.

2.8 In Patient billing and TPA (Third Party Administrator) Department

1) TPA:

TPA are separate entities which work as a mediator between the insurance companies and the insurance receiver. As public sector undertakings (PSU), there are four general insurance companies:

1. Oriental Insurance
2. New India Insurance
3. United India Insurance
4. National Insurance

In recent years, a lot of private sector insurance companies such as Bajaj Allianz, ICICI Lombard, TATA AIG etc. have entered the insurance market. The PSU together formed Raksha TPA and also came up with GIPSA (General Insurance Public Sector Association), which standardized the price of 42 general procedures so as to control the increase in price of such procedures.

There are 4 types of files:

1. OPD file
2. IPD file
3. ESI file: File where no claim is required, permission gets reviewed every seven days.
4. Corporate file

2) Manpower (shift from 8am to 8pm) of TPA:

- TPA incharge-1
- Senior executive-1
- Executive-2

Manpower in dispatch (shift from 9am to 6pm) department:

- Senior executive-1
- Executive-2

Manpower in Recovery Department:

- Manager
- Executives-3 (For TPA-2 & for CGHS/ECHS-1)

3) Empanelment:

The tariff version 7 & 32 TPA which are empanelled and 84 corporate tie ups that the hospital has.

Corporate tie ups are majorly useful in terms of cash billing discount which does not go beyond 10%.

4) Facility extended by the hospital to insurance beneficiary:

The hospital provides credit billing to the patient after taking the following documents from the patient and a cash deposit of Rs 5000.

1. TPA name and ID card
2. Name of the insurance company
3. Photo ID proof of patient
4. Doctors prescription for advice admission or surgery
5. Previous year policy papers(for exclusion of policy)
6. Investigation reports to support diagnosis.
7. MLC/FIR copy if the patient is an MLC.

5) General Turnaround Time fixed as per department

1. Pre-authorization form is supposed to be signed and sent within 6 hours. Else it would be rejected.

2. Discharge process 4hours
3. Query is to be answered in 2 hours
4. Dispatch files should be submitted within 7 days to the TPA otherwise the payment gets delayed.
5. TAT for dispatch department to get the file ready and handle it over to recovery is 3 days

Final Check List with patient information and TPA signature which is used for assembling the dispatch files:

1. Covering letter
2. Authorization Letter
3. Pre-authorization Letter
4. I-Card/ID Proof
5. Claim Form
6. Payment Receipt
7. Bill Summary and detail
8. Discharge Summary
9. All diagnostic report & Film
10. Laboratory Report
11. CAG/PTCA and THR/TKR Sticker
12. MLC report photocopy
13. Blood sugar charting photocopy
14. N/P and other deduction test
15. Others

6) CGHS and ECHS Billing Department:

This department consists of 2 senior executives and 1 Assistant Manager.

CGHS stands for Central Government Health Scheme, which is the insurance facility given to central government employees.

ECHS stands for Ex-serviceman Contributory Health Scheme, which is the insurance, extended to ex serviceman from the defense services.

Patient under both the schemes are admitted based on the referral letter which they receive from their respective polyclinic.

7) Set of documents to be sent:

1. Covering letter mentioning the follows:
 - a. UTI TSL (UTI technology and service Ltd) ID
 - b. Bill ID
 - c. Particular of ESM (Ex-servicemen)
 - d. Date of admission & discharge
 - e. Date of uploading to UTI TSL
2. Referral Form
3. Copy of Membership receipt/card self attestation
4. Summary of bill
5. Prior approval if applicable
6. Discharge Summary
7. Drug certificate (if price is above 2000 for CGHS patient or above 1500 for ECHS, then a certificate has to generated from the pharmacy based on norms)
8. Invoice and outer pouch for implant/stents if applicable
9. Investigation reports

After discharge only ECHS patients are given 7 days of medicine in advance. The department is supposed to forward the documents online within 10days in case of an inpatient and within a month for outpatient.

8) IP Billing:

The work of IP Billing is twofold. It updates the bills of each patient during the course of stay and also generates the final bill for the patient. This department is responsible for the final settlement every day the patient's attendant is updated based on the amount due. Also for people who do cash billing have to pay their final amount at the IP billing desk.

Manpower: Billing Manager-1

Assistant Manager-1

Senior Executive-1

Executive-6

9) Cash Billing is done in the following way:

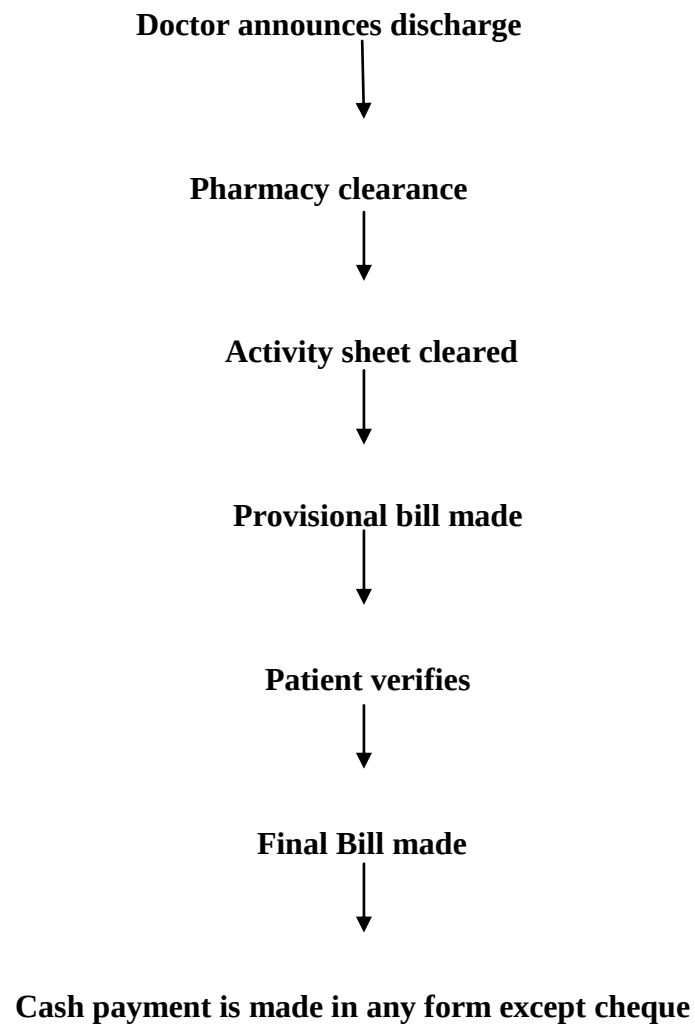


Figure 2.8: Discharge process flowchart

10) In case of emergency:

CGHS or ECHS patients will be given a different rate. If the patient is admitted then referral letter will be required the next day. Also cashless billing is allowed to pensioners and ex servicemen alone. Service man will be asked to pay at CGHS rate.

ESI patients need not pay any amount. Cashless billing is given to such people.

In case of corporates generally patient comes with credit letters based on which money can be reimbursed from the company itself.

2.9. Front Office

Location: Ground floor

1) Introduction

Front Office is the First Interactive Point for a patient coming to a Hospital. Front Office executives do multiple tasks right from taking multiple incoming telephone calls from patients who want to schedule appointments, registration, billing, admission, replying to queries of the patients, dispatching of reports, preparing individual patient file to entering records in HIS

Manpower & Hierarchy:

There are 36 people working under Front Office Department.

Hierarchy:

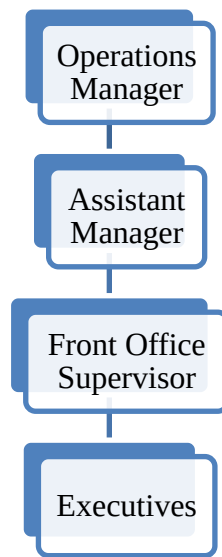


Figure 2.9: Organogram of Front Office Department

2) Different Departments in Front office:

- OPD Bill Counter
- Corporate Bill counter
- Report collection counter
- Counseling room
- OPD Counter A to F
- Sample collection room
- Preventive health checkup
- International marketing
- OP Pharmacy
- Call centre

OPD Bill counters

It accounts for registration & billing, and patient's queries; even corporate billing, Lab Billing, Radiology Billing which have their separate counters. However, it is not meant for billing for PHC.

Along with paying patients, cashless services are provided for ESI, ECHS and CGHS patients. For CGHS and ECHS patients, if cash, Rs.58/- is being charged and Xerox of ID proof is kept by the Hospital. If credit, referral letter from CGHS Clinic is required, which is valid for 7days. Colored photocopy of card & bill has to be kept.

Report collection counter

This is a report collection counter for Lab. Investigations, Radiology, cardiac procedures, and Neuro procedures. The respective departments give reports of endoscopy and PHC.

(Normal timings for reporting- if tests are done before 12pm, reports can be collected after 5pm on the same day. If after 12 pm then next day morning.)

Counseling Room

If patient gets admitted in the hospital, patients are explained the estimate of hospital stay, expenses, etc. in this room. And they are allotted room according to their choice and availability.

Bed Management

It is responsible for allotment of bed and shifting of beds on patient's request. If the desired bed category is not available then the patient is upgraded into the immediate above bed category.

OPD Counters A to F

Counter A- Cardiology

Counter A also includes Cardiac Procedure room. The procedures performed in Cardiac Procedure Room and their Turn around Time is as follows:

1. ECG-Electrocardiography: 5 min
2. Echocardiography/Color Doppler: 15-20 min
3. Treadmill Test(TMT): 25 min
4. Stress echocardiography: 35 min
5. Transoesophageal cardiography (TEE): 15 min

Counter B involves following specialties:

- Obs. and Gynae
- Paediatrics
- ENT
- Ophthalmology

Counter C- Neurology

This counter caters to patients coming for Neurology Consultation. Neuro Procedure Room also comes under this counter where following Neuro procedures are being done.

1. EMG-Electromyography
2. EEG-Electroencephalography
3. NCV-Nerve conduction velocity test.

(Time taken by each procedure-45 min)

Counter D

Counter D caters to patients coming for General and Lap. Surgeon consultation and this is also a Billing Counter for Lab. and Neuro procedures bill

Counter E

- Internal Medicine
- Orthopaedics & Joint Replacement
- Gastroenterologist
- Psychiatry
- Rheumatology

Counter F

- Neurosurgery
- Urology

- Hematology
- Spine clinic
- Psychiatry/Clinical Psychology
- Nephrology

Sample collection Room

Blood, urine and stool samples are collected in this room and GDA from Lab. come to collect it after every half an hour.

Preventive Health Checkup (PHC)

Manpower:

- Customer care executives(2)
- Gynecologist (1)
- Female Nurse with Gynecologist (1)
- Physician (1)
- Technicians (3)

Different Areas in PHC Department:

- Billing & Registration Area
- Sitting Area
- Gynae. Room
- Physician room
- Sample collection room
- Change room
- ECG, TMT ,Stress ECHO
- US,ECHO, PFT(Pulmonary Function Tests)
- Mammography, Densitometry(for knowing Bone Mineral Density)
- X-Ray room
- Refreshment area

Call centre

Call centre gives the appointments for consultant Doctors and visiting consultants and respond to other queries. 8 Executives are in place in the Call Centre and work in 3 shifts:

Call Centre do not give appointments for Radiology, Cardiac procedures, Neuro. Procedures & PHC (up to 4:30pm).

The call centre except code Black also announces safety codes.

International Marketing

This Department caters to the patients who come to the Hospital from outside countries. International patients come mostly from Arabian countries specially Nigeria, Sudan, Iraq, Afghanistan.

OP Pharmacy

OP Pharmacy mainly serves the needs of medicines of the patients prescribed by Doctors. Arrangement of medicines in the OP Pharmacy is according to ABC Analysis and it also follows the Last in First Out and First In First Out concept.

At the end of every month, staff in OP Pharmacy manually checked the expiry date of medicines and returns the medicines to the vendor 3 months before the expiry date. To avoid the confusion of Look Alike and Sound Alike Drugs, OP Pharmacy has a separate cabinet for these drugs.

2.10 Dialysis unit

Dialysis unit has five dialysis machines and 1 dialyzer reprocessor. Dialysis takes 3-4 hrs. to complete the process. Therefore, the appointments given to the patients are in four shifts as mentioned under:

- Morning 8-12
- Afternoon 12-4
- Evening 4-8
- Night- 8-12

Manpower:

- Staff nurse (3)
- Technicians (3)
- GDA (1)
- Housekeeping personnel (1)

2.11 Endoscopy Suite:

Consists of procedure room, pre- & post-procedure room and cleaning area.

Procedures done:

1. Colonoscopy
2. Endoscopy
3. Sigmoidoscopy
4. ERCP (done in OT)

TAT for the procedures:

Each procedure takes 10-15 min. If pre-care, post-care and reporting is added it takes 30 min.

Only colonoscopy requires 30 min. (only for the procedure)

Manpower:

- Doctor (1)
- Female nurse (1)
- Technician (1)
- GDA (1)

2.12 Radiology Unit:

Includes Digital X-Ray, CT scan, MRI Scan, Ultrasound and Fluoroscopy.

X-Ray

There are four X-Ray machines:

Three in radiology unit-500 MA

One in PHC -300 MA

MRI

Currently 1.5 Tesla MRI is being used in Paras Hospital. If MRI is needed for an ICU patient MRI comfortable Pulse Oxymeter, ventilator and O2 cylinder is used. MRI room is kept at a temperature of 16-22 degree Celsius.

CT scan

16 slices CT is being used by Paras Hospital. Required temperature is same as of MRI.

For both CT and X-Ray, the technicians for shielding use lead screen and lead apron.

Ultrasound

There are three Ultrasound machines in the Hospital:

Two in Radiology

One in PHC

Process Flow:

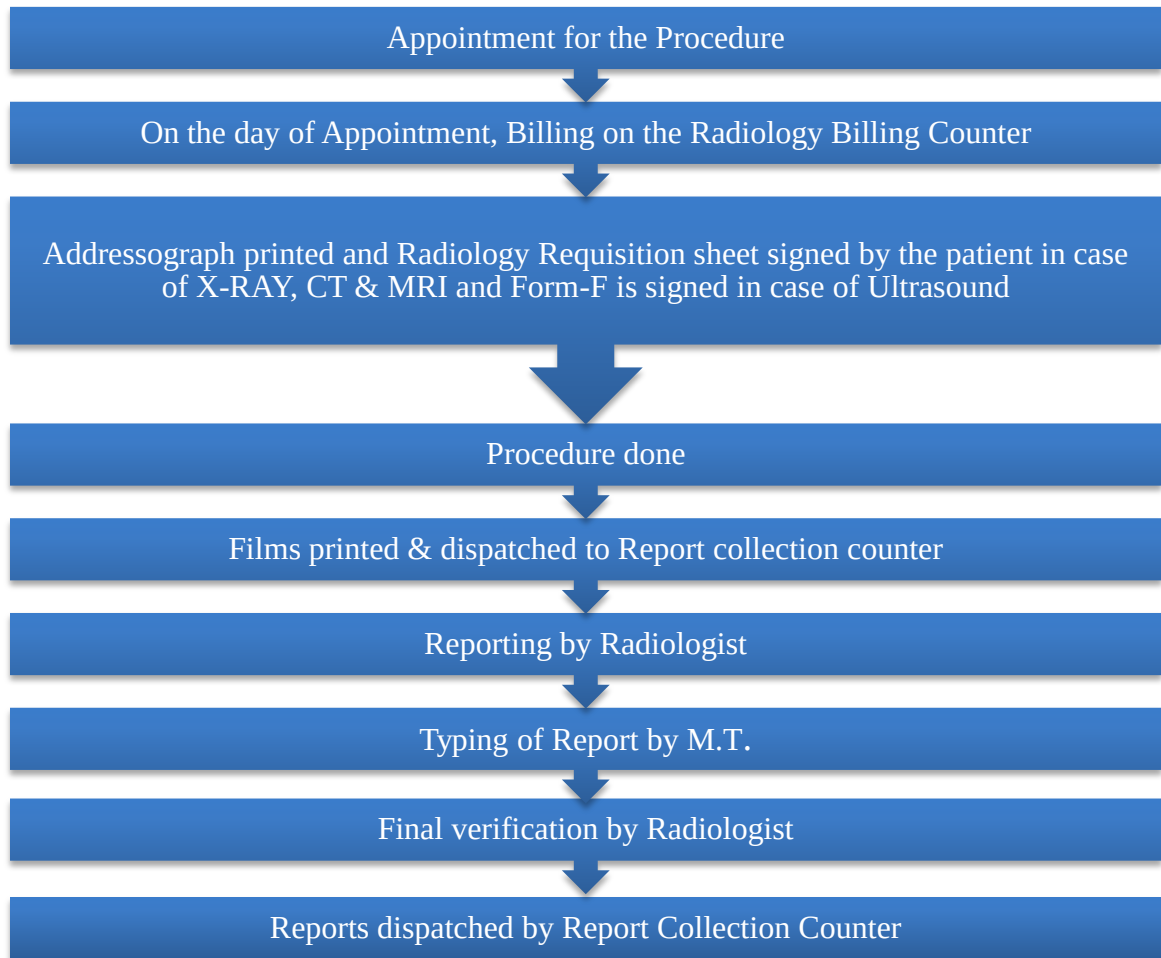


Figure 2.12.1: Process Flow in Radiology

TAT for the Procedures:

	Capturing	Reporting	Typing	Total
X-Ray	5 min	5 min	2 min	12 min
MRI	15-20 min	15-30 min	5-10 min	35-60 min
CT	10-15 min	10 min	5-10 min	25-35 min
Ultrasound	10 min	2-3 min	2-3 min	14-16 min

Table 2.12.2: TAT for different Radiology Procedures

2.13. Emergency Department

Location: Ground floor

It is 24 hour functional & is eight bedded

Different Areas in Emergency:

- Registration & Billing Area
- Waiting Area
- Patient's area (8 beds)
- Store room
- Utility room
- Minor OT
- Plaster & Dressing Room
- Day care unit (8am to 8pm) for the patients under observation

Manpower & Hierarchy:

Emergency Department is headed by 2 CMOs with 20 nursing staff.

Hierarchy

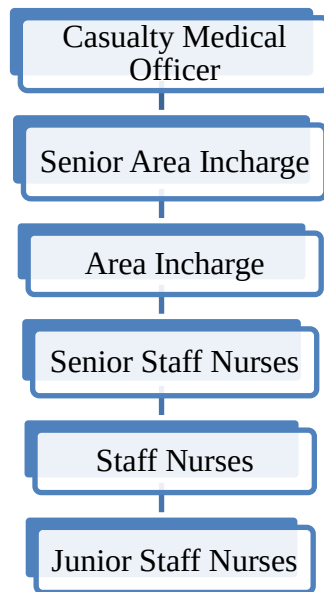


Figure 2.13.1: Emergency Department Organogram

1) Scope of emergency

To cater all emergencies coming to hospital, their stabilization, admission, transfer or referral from emergency department within or outside the hospital.

- i. ER provides a comprehensive & uniform emergency service/ care to patient (functional 24*7).
- ii. All patients are assessed & triaged by a qualified & experienced medical & paramedical staff & provided appropriate level of care in ER department.
- iii. The ER department provides medical evaluation & treatment (including rapid resuscitation & stabilization) .Patients receive medical referral / transfer (including critically ill patients & or those are not in scope of services of hospital)
- iv. Emergency care services provided include-
 1. Stabilization of life threatening conditions.
 2. Life saving procedures.
 3. Immediate treatment of medical & surgical emergencies.
 4. Emergency treatment for minor injury or illness.

2) Admission process flow

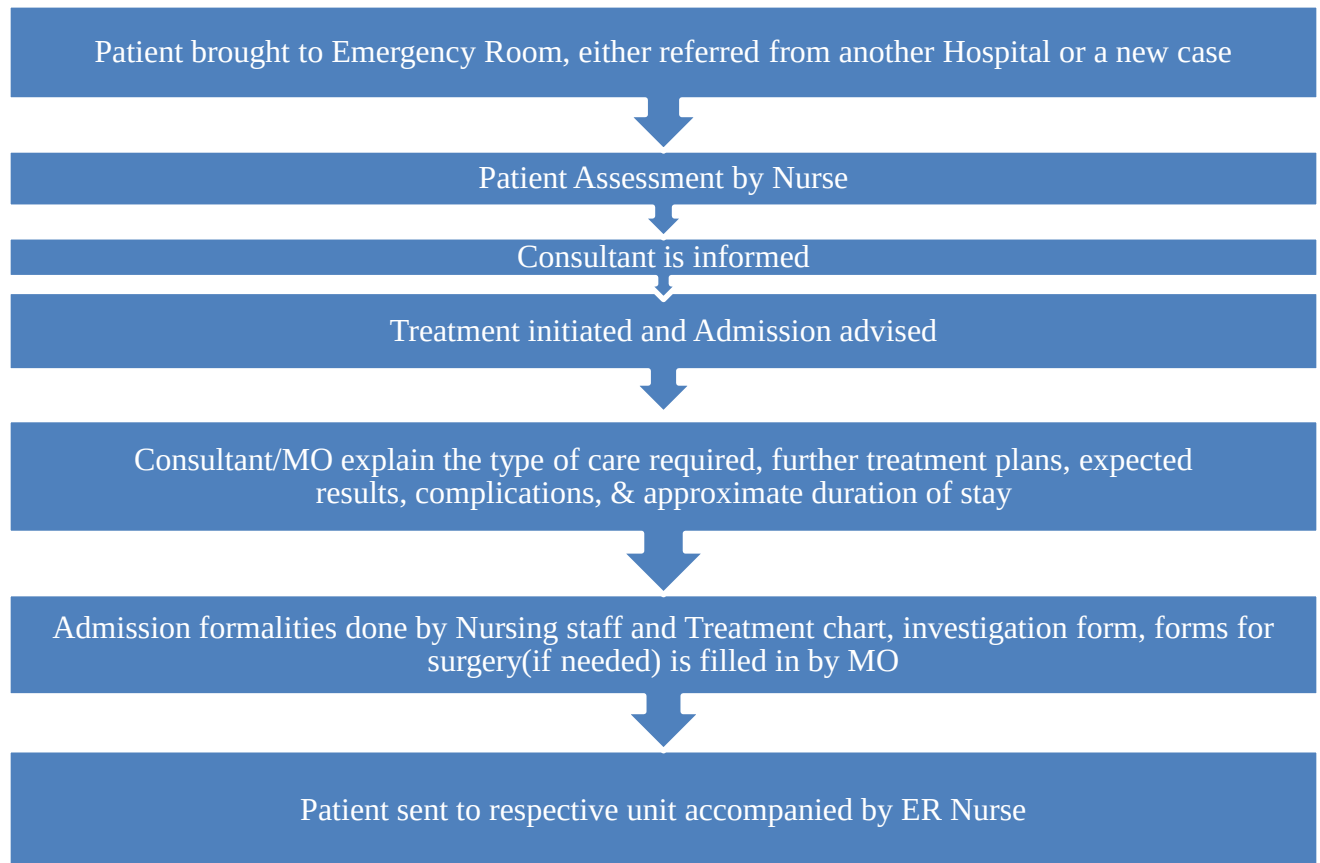


Figure 2.13.2: Process Flow showing admission process in Emergency Department

3) MLC cases

It is a case of injury or ailment etc where attending doctor after taking history & doing clinical examination of patient thinks that some investigations by law enforcing agencies are essential so as to fix responsibility regarding the said injury or ailment etc according to law. CMO attending the case, label the case as MLC.

Cases labeled as MLC:

Trauma, burns, electrocution, poisoning, industrial accidents, sexual offences, cases requiring age estimation, criminal abortion, animal or snake bite, cases of coma where cause could not be ascertained, cases of starvation including hunger strike, unclaimed

newly born, hanging, strangulation, drowning, suffocation etc, cases brought by police or sent by court for medical examination, BID, where death certification due to disease or natural cause is not possible being not apparent, result of medical malpractices.

4) Process Flow in Triage

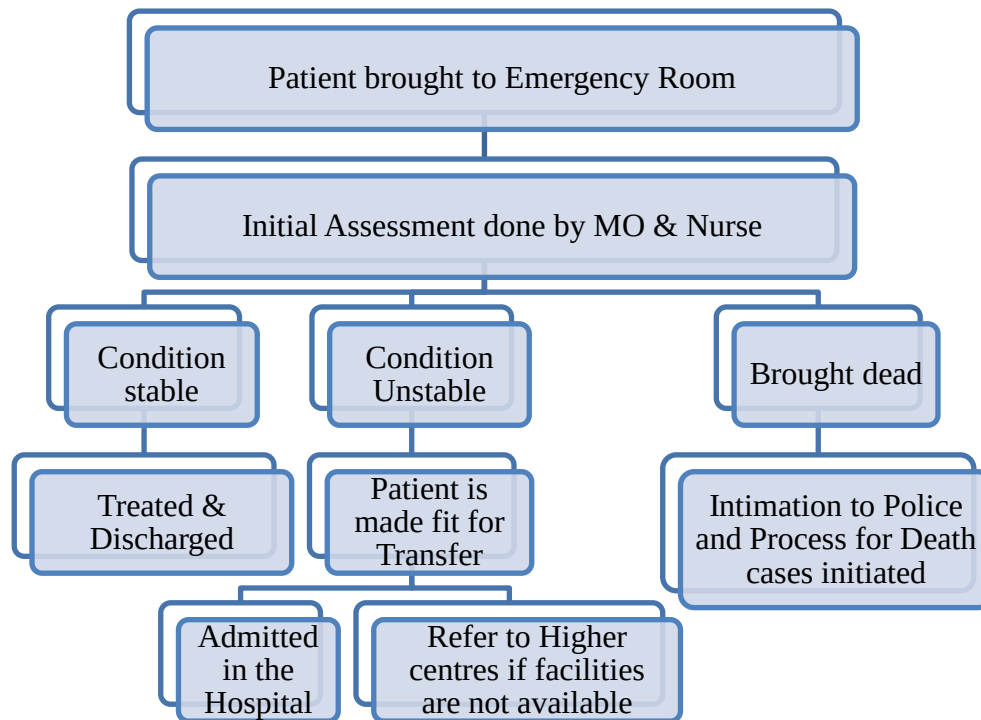


Figure 2.13.3: Process Flow in Triage

5) Important medications used in Emergency Department

High alert medications:

These are defined as those which could cause an immediate life threatening condition for the patient if an error in administration occurs.

Narcotic drugs & psychotropic substances (NDPS):

These are drugs which required special storage & issue to prevent misuse, pilferage etc e.g. fentanyl, morphine, pethidine, sufentanyl (also known as Schedule 2 drugs).

Each person independently compares the label & product contents in hand versus the written order & EMAR (if it is the first dose) or label. Double check of medications prior to administration by 2 registered nurses after reading the label is mandatory.

Hospital has made some policies regarding the use of Narcotic Drugs

General guidelines for the Medicines:

- High alert medications dispensed, & administered only on prescription by credentialed personnel / OT/ ICU/ ER in charge doctors to critical care & special care areas
- Double check of Medications prior to Administration by 2 Registered Nurses by reading aloud:
 - i) Right medication, Right dose rate, including double check of any calculation & verification of pump settings.
 - ii) Right route, including line reconciliation, right frequency, right patient.
- High alert medications details will be recorded in Medication Administration Record.
- Storage as per manufacturer packaging instruction.
- Narcotics must be stored under double lock & key.
- In case of expiry/ breakage, excise inspector will be informed accordingly.
- Warning labels for all cytotoxic drug containers, as well as shelves.

Chapter 3:Project – DMAIC Study of OPD-Front Office at Paras Hospitals, Gurgaon

3.1. Introduction

Out Patient Department (OPD) serves as the mirror of the hospital, reflecting core concepts, capabilities and functioning of the hospital to the patients who visit hospital. OPD forms the **first point of contact between the patient and the hospital staff**.

It is a very important wing of the hospital, which is visited by the large section of the community, therefore public relation skills are of utmost importance. It is a **shop window** for the patients, making the **first impression** of the hospital like the window-shopping in a super market where the articles are laid down to chose and pick. Thus, OPD staff should be polite, cheerful, cooperative and efficient. Hence, it is very important to build the Out Patient Department to be as efficient as possible and strive to reach excellence.

It is a place where preventive and promotive health services of the hospital are implemented.. A hospital department where the diagnostic and/or treatment services are provided to patients without overnight stay in hospital. Thus contributing to reduction in morbidity and mortality. OPD also acts as **a filter for the inpatient admissions**, ensuring only those patients are admitted who are most likely to benefit from such care. Patient visit the OPD for various purposes **like registration, billing, consultations, diagnostics, day care services, referral admission, investigations, post discharge follow up and preventive health checkups**.

The preferable location of OPD is on the ground floor. The diagnostic and laboratory investigation services are situated such that they are easily approachable from here. The OPD area consist of reception, waiting area, billing desk, doctors chamber, nursing counters, examination room, treatment room, minor OT, public utility area etc. **Front office** includes reception, admissions, billing, diagnostics billing. The work that is carried out in a front office of a hospital vary, depends on the size of the hospital and the number of employees that work. In general, Front Office also includes a reception desk to greet patients and visitors as they enter the hospital and provide information where to go or the services that are provided.

During the last decade, an immense competition is seen in the healthcare industry with so many players coming into play. Since OPD forms the first impression on the patient, it is therefore important to ensure that the OPD services provide excellent services to the patients. OPD congestion and long waiting time is an important managerial challenge for the hospitals. Therefore, for efficient management and function of the OPD requires a systematic study. This

can be evaluated by conducting time and motion study of the OPD system to observe and analyze the unnecessary time consuming areas and provide suitable interventions to improve efficiency.

F.W. Taylor developed the Time Study to determine the amount of time required in completion of a specific activity, to identify unnecessary movements, which consume time thereby affecting the efficiency. **Gilberth** used Motion Study to identify various unnecessary movements or activities while completing a process **Time and motion study evaluates time taken to perform various processes and thus is concerned with increasing performance and minimizing time taken to perform various activities without compromising on quality.**

Standard time is the time allowed to an operator/employee to carry out the specified task under specified conditions and defined level of performance or amount of time required to complete a unit of work. It is also known as **Turnaround Time (TAT)** ⁽¹²⁾.

3.2. Review of Literature

A literature search was performed to identify published studies related to the OPD and time motion study. The search was limited to full paper articles published in English. However, this review gives a broad reflection of substantial research performed across different countries, with a substantial contribution from Indian studies. Electronic databases searched include ResearchGate, PubMed Central, BioMed Central, ScopeMed, , Internatinal Journal of Pharmacy Practice, Oxford Journals and British Medical Journal, International Ayurvedic Medical Journal, Internatinal Journal in Management and Social Science, International Journal of Health Sciences and Research.

In a study by Fernandes C. (1994), it was found that the amount of time the patient waits to be seen, is one factor which affects the utilization of health care services.^(1, 2)

T and M study addresses quality issues and efficiency to measure time on a specified task, work quality, and patient safety as described in a study by Karsten (1996) ⁽³⁾

A study by Mackey TA,(1997) suggest that in a competitively managed health care environment patient waiting time play an increasingly important role in a clinics ability to attract new business. It is difficult to sell services if individuals are dissatisfied with waiting time. ⁽⁴⁾

An article published at New York in 1997 believed the same idea that for an effective time and motion study, observers must be also be competent,observers must be able to determine the difficulty of the job and must be able to decide what a normal performance is (Stuttaford,1997).⁽⁵⁾

MA Bashith (2008) assessed that the patient satisfaction regarding the services provided in Out Patient Department in terms of clinical care, availability of services, waiting time, and cost. He further says patient satisfaction is an important parameter for assessing the quality of patient

care services and there is a need to assess the health care systems regarding the patient satisfaction whenever possible.⁽⁵⁾

According to a report from the Fraser institution (Feb 2012), waiting time for certain elective procedures in Canada were the longest in 19 years. The institute's annual survey asked physicians in 10 provinces about the length of time patients wait to receive treatment once a GP has made a referral. Provincial and federal government's health-care spending increases and reforms have focused on reducing wait times.⁽⁶⁾

Dr. Jawaher SK (2012), Outpatient department is a shop window of any hospital. The difficulty that some of the patient faced in the outpatient department was waiting time but still they are satisfied with the hospital if the overall services rendered to them is good. Therefore, waiting time is one of the indicators that can directly or indirectly affect the satisfaction level of the patients but if all other services rendered to them are good then it has a very negligible effect on it.⁽⁷⁾ Also in a study by Jerome Mpaata, Ajuna Albert (2012), sometimes a very little problem and its small solution reflects a significant result in reducing waiting time in OPD, such as tea breaks by staff, hospital uniform, hospital signage, nearby neat and clean toilets etc.⁽⁸⁾

Six sigma approaches can curtail significant reduction in waiting time in Outpatient department in a study by Dinesh T.A. (2013)⁽¹⁰⁾

Study by Sam A. (2014) shows that when the number of server is below a certain threshold, clinic develops an infinite queue, when it is slightly above the threshold, waiting time and queues are lower. A good balance between the number of doctors, costs and optimal system performance is important for sustainability.⁽⁹⁾

3.3. Problem Justification

However, huge innovations and technologies are being applied in the healthcare industry still patient satisfaction has not been attained to a level at par with these advancements. Considering the Indian perspective, though, many studies have been conducted to have an insight on evaluating ways to reduce the time taken in various activities (especially non clinical) in hospital, in the Accident and Emergency Department and In patient Department, this study focuses on OPD and Front office of the hospital. Since a long waiting time in the OPD, causes a negative effect on the patient satisfaction, hence a healthcare facility performance can be assessed by this time and motion study.

3.4. Rationale

From the insight from the various international and national studies, OPD gives the first impression to the patient about the hospital services, therefore a systematic study of the OPD system is essential to create a room for improving the efficiency without compromising on quality. To shed light on the various issues that cause increase in waiting time, this study is proposed.

3.5. Research Questions

- To determine the process flow activities of Out Patient Department.
- To identify various factors and activities contributing to delay in billing process.
- To suggest measures for reducing the waiting time of patients in outpatient billing department.

3.6. Objective

To conduct a time motion study to review the average waiting time of patients consumed in queuing at various levels such as registration, radiology, pharmacy, billing counters.

3.7. Methodology

3.7.1 Research Design

This study is a direct observational cross-sectional study in which the organization of the OPD and Front Office services has been observed and the time taken by a patient at each counter is recorded. This is a Time and Motion study conducted in the OPD of the hospital to study the waiting time at each counter.

3.7.2 Study Setting

The study was done at the OPD of Paras Hospitals, Gurgaon covering all patients attending the Out Patient Department.

3.7.3 Study Duration

One month

3.7.4 Sampling

Convenience Sampling Technique is used.

Inclusion criteria was all the patients(men, women and children) coming to the OPD-Front Office for OP Registration and Billing, Diagnostic Billing and Acknowledging and Report collection and Pharmacy Billing.

3.7.5 Sample Size

Sample size for OP Registration and Billing is 400(100 new patients and 300 old patients).

Sample size for OP Pharmacy Billing Counter is 300.

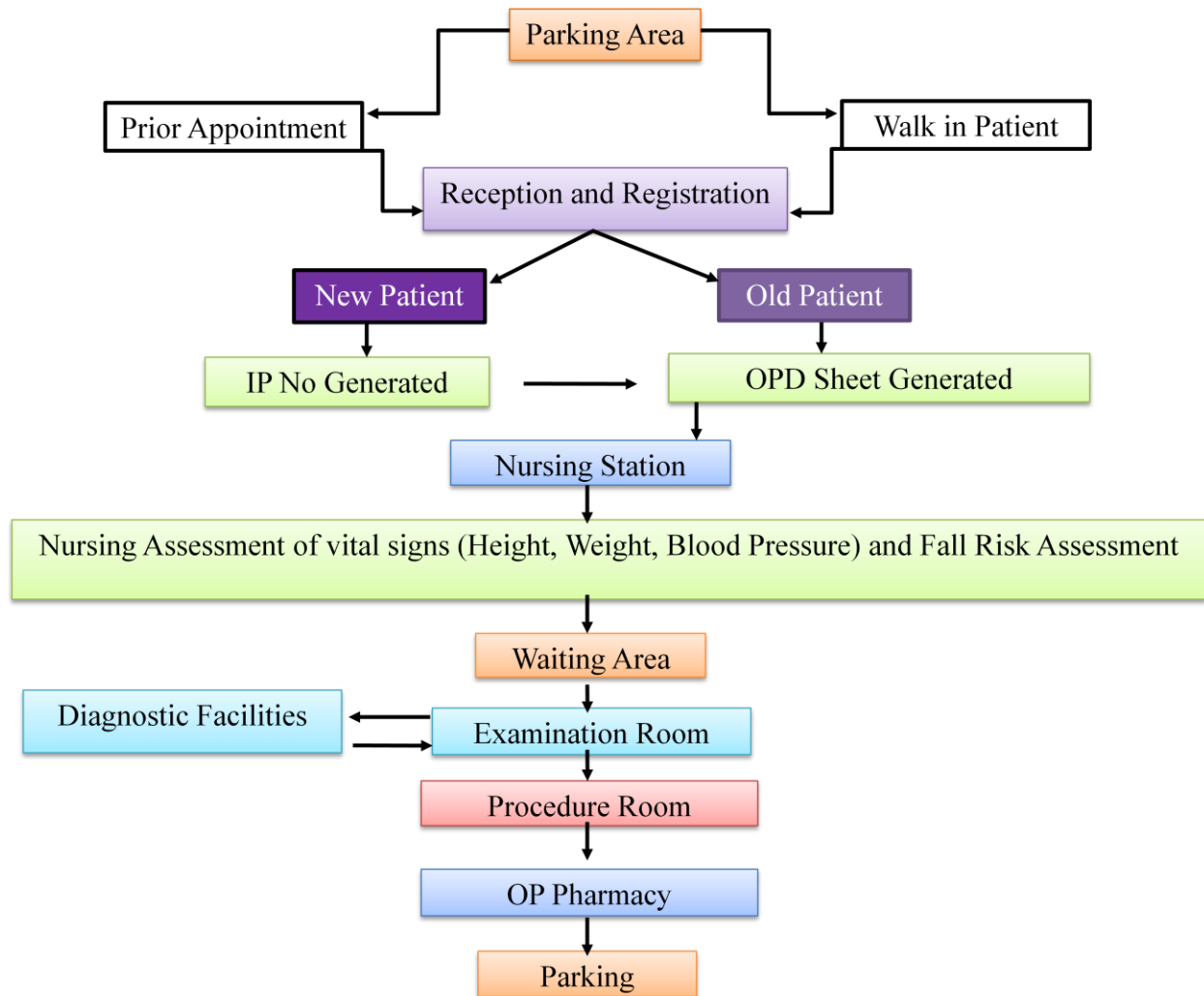
Sample size for Diagnostic Counter is 60.

Sample size for Preventive Health Checkup is 15

3.7.6 Study Tool

For Time and Motion Study, time was directly noted and observed at each counter with the help of same functioning watch. The time difference was calculated and then analyzed.

8. Observation



The data is collected in a format in which the time slots are given at each step i.e., at OP registration and billing counter, diagnostic billing and sticker print counter and pharmacy billing and medicine dispense counter and observations are made for dispatch of reports and call centre.

3.8.1 Various Areas of OPD Observed in the Study



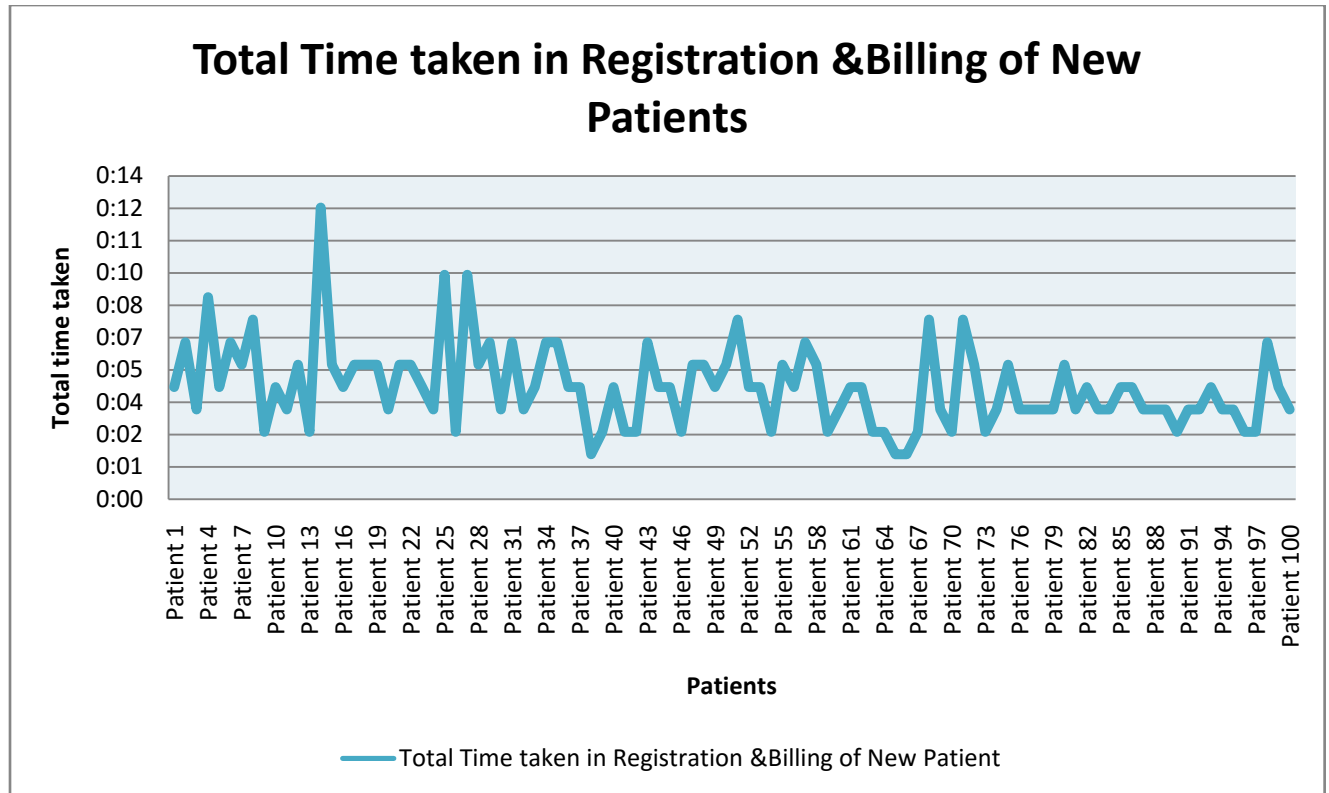
3.8.1.1 Study of Waiting Time at OPD Registration and Billing Counter

A sample of 400 patients is selected for data collection, that represents % of total OPD.

New Patients

- Total Patients Observed is 100.
- The data is collected in a format in which the time taken in registration process from the point patient arrives at desk and after registration the time taken in billing of the patient.

The OP registration and billing waiting time for new patient is represented graphically:

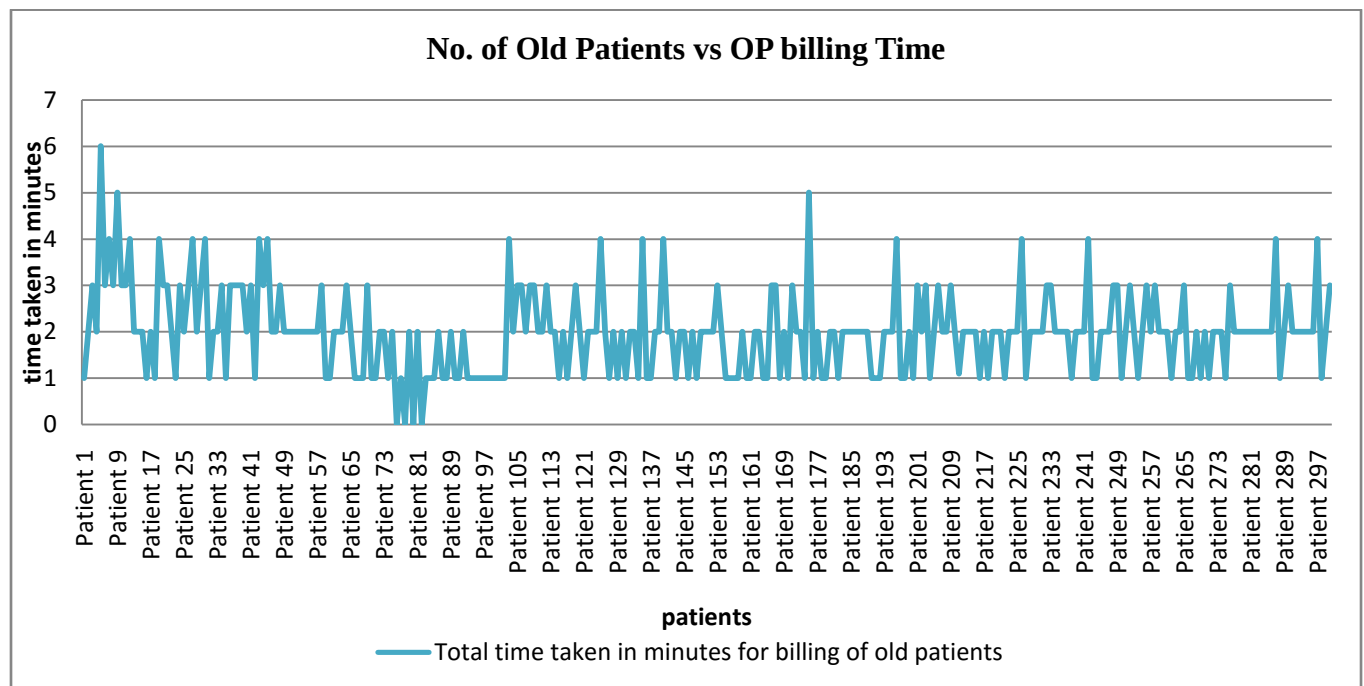


- Average Time taken in registration process from arrival on desk is 1minute 52 second and total time taken is 3hours 7 minutes.
- Average Time taken after registration to the billing process is 3 minutes 9 second and total time taken is 5 hours 15 minutes.
- **Turnaround Time is 5 minutes 1 second.**

Old Patients

- Total Patients Observed is 300.
- The data is collected in a format in which the time taken in billing of the already registered patients (old patients) from the time patient reaches the desk is observed.

The OP billing waiting time for old patient is represented graphically:



- Average Time taken after registration to the billing process is 2 minutes 17 second and total time taken is 11 hours 25minutes.
- **Turnaround Time is 2 minutes 17 seconds.**

Observations:

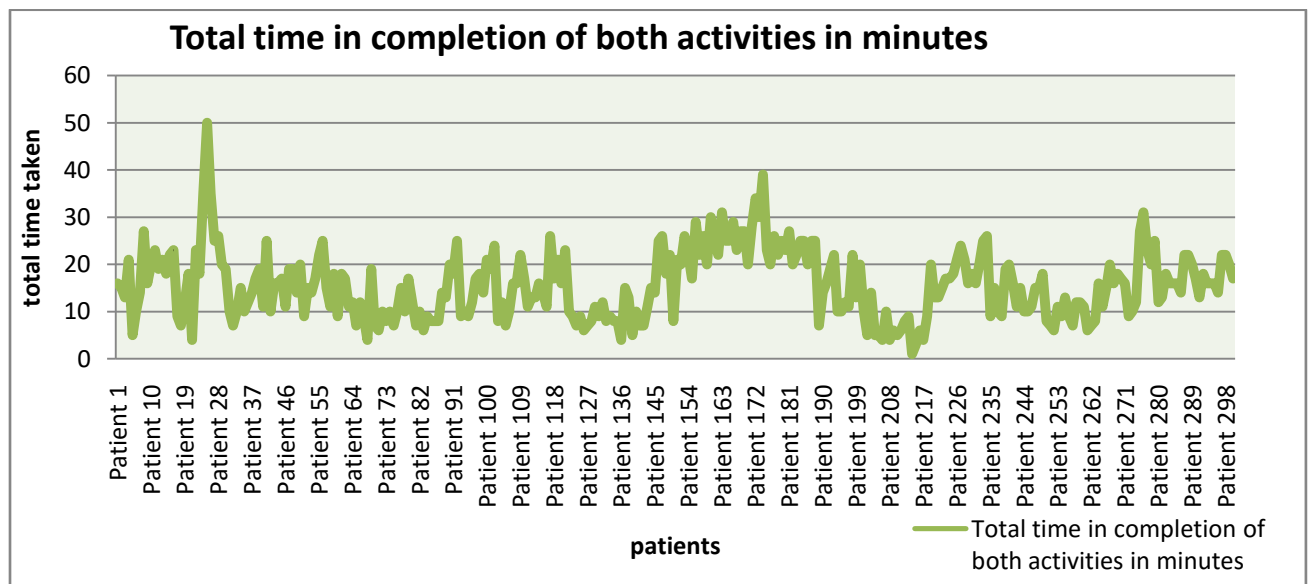
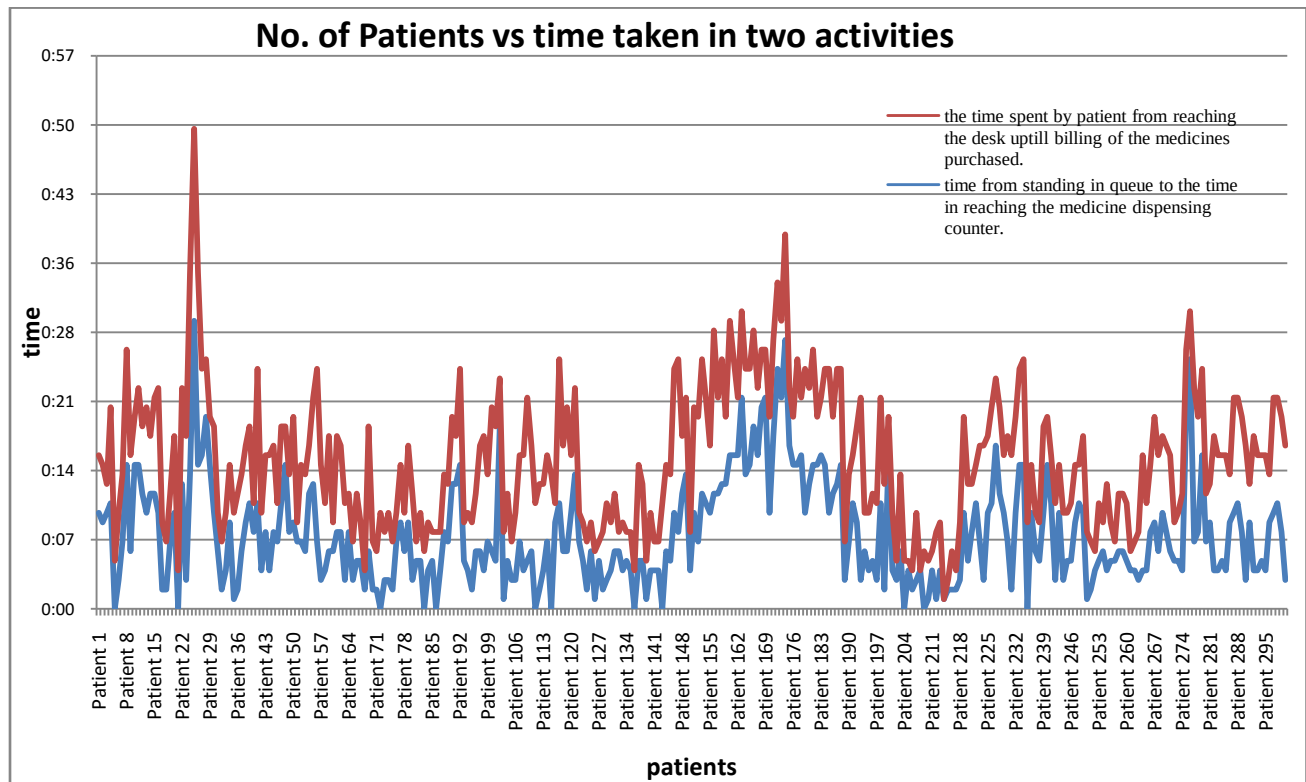
- Server gets down frequently
- Often drip in electricity
- Information about Doctors availability is not adequate
- Required machines (Xerox, Billing) not available in adequate number at workstation; if present, not in working condition which leads to frequent movement of staff to other counters
- Lack of system input knowledge regarding various billing procedures by some staff
- Frequent calls are made to the respective nursing counters for the availability of doctors.

3.8.1.2 Study of Waiting Time at OP Pharmacy Billing Counter for Patients

- Total Patients Observed is 300
- The data is collected in a format in which time is observed from the point when the patient comes and stands in queue to the point patient reaches the medicine-dispensing

counter as **Activity 1** and the time spent by patient from reaching the desk until billing of the medicines purchased as **Activity 2**.

The OP Pharmacy billing waiting time for patients is represented graphically



- Average time taken from standing in queue to the time in reaching the medicine-dispensing counter is 7minutes 47 seconds.
- Average time spent by patient from reaching the desk until billing of the medicines purchased is 7minutes 43 seconds.
- **Turnaround Time is 14 minutes 09 seconds.**

Observations:

- No proper queue in which the patient moves.
- Others counters are not used frequently causing rush and hassle at the main gate of OPD.
- At times medicines for inpatients are also collected from OP Pharmacy.
- Many a time's medicines are not present in the OP Pharmacy due to which the staff has to run frequently to main store consuming a lot of patients' time.

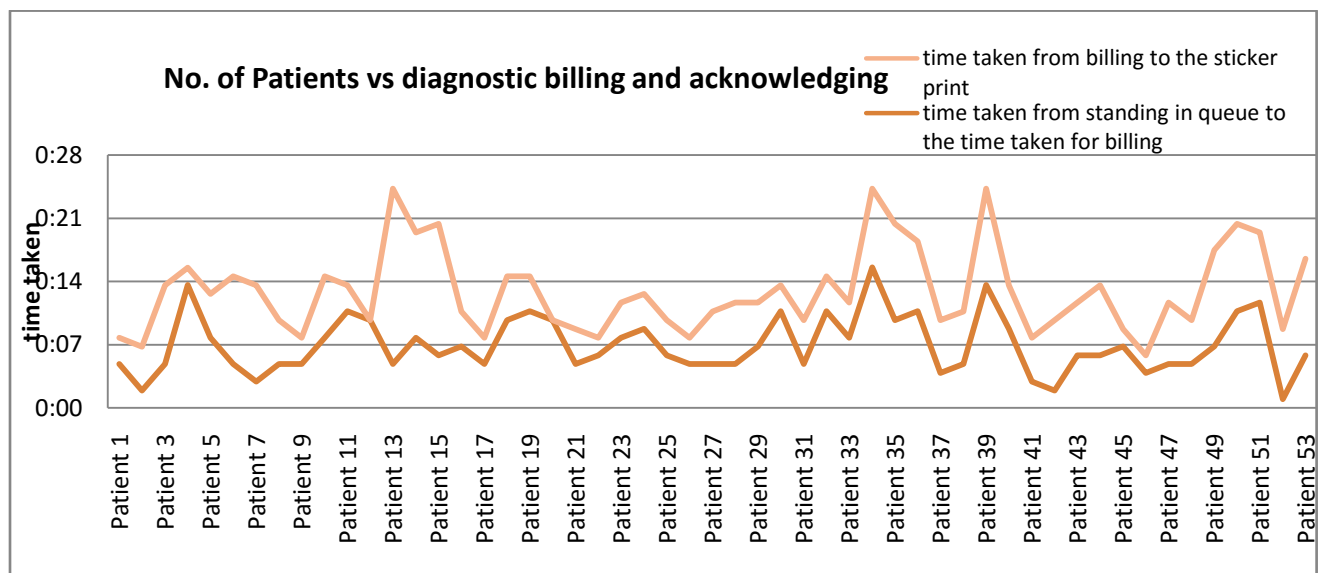
3.8.1.3 Study of Waiting Time at Radiology Counter

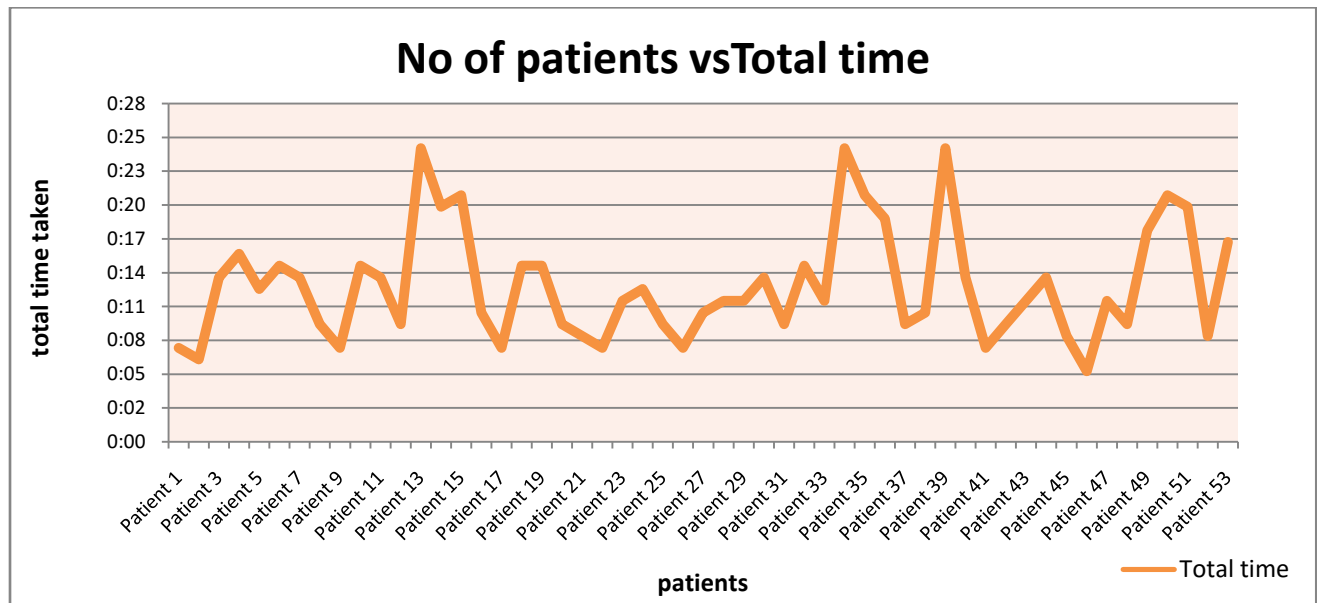
- Total Patients Observed is 60.
- The data is collected in two steps.

Step 1 is the time taken from standing in queue to the time taken for billing.

Step 2 is the time taken from billing to the sticker print.

The Diagnostic billing and acknowledging waiting time for patients is represented graphically





- Average time taken from standing in queue to the time taken for billing is 7 minutes 8 seconds.
- Average time taken from billing to the sticker print is 6 minutes 11 seconds.
- **Turnaround Time is 13 minutes 19 seconds.**

Observations:

- There is a huge of rush of patients around the counter which makes the place messy
- There is a confusion regarding the billing counter, that out of the two which one is a billing counter and sticker print counter.
- The person on the billing counter has to ask about the different investigation.
- There is long waiting period for USG and MRI.
- Patients for appointment of USG are explained well about the pre requirements of it. The information about the collection of the reports and film is given, still there is a bit perplexity regarding it.

Observations of Report Dispatch Counter:

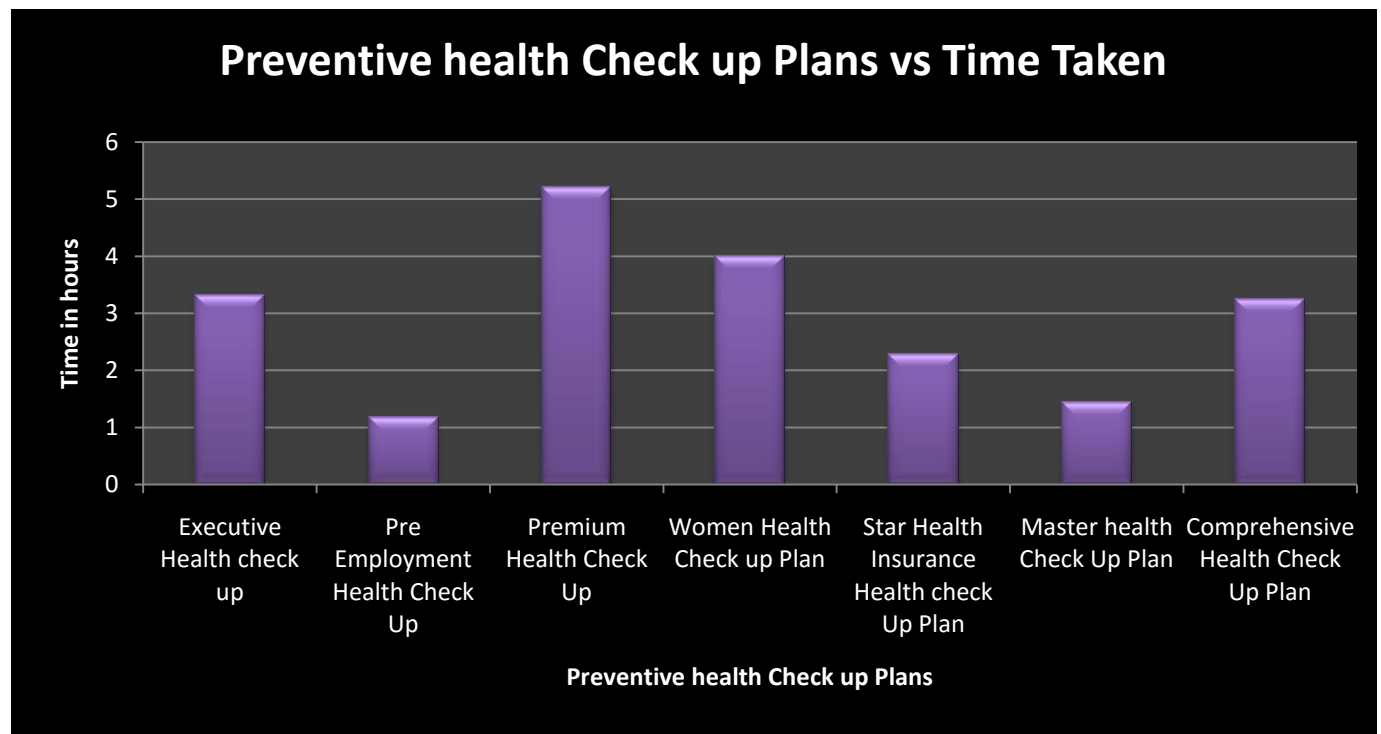
- Staff Behavior.
 - Participates in answering to the patients' query.
 - Does not seem to be not much involved with the work.
 - At times, not much convincing to the patients.
 - Most of the times, not present on the desk causing inconvenience to the patient.

- Time taken in printing the reports from patient giving the required details to handing over the report is one minute.
- Time taken in giving reports present in hard copies, X-Ray/MRI/USG films to taking counter signatures of patients is from 1-2 minutes.
- There is a less sync between the laboratory/radiology and dispatch counter as for some reports patients are informed about the readiness of the reports but are not made available at the dispatch counter making it uncomfortable both for the patient and for the staff.
- At times, the staff is not well aware about the availability of the hard copy reports from the outstation laboratories.
- For many patients the hard copy reports are not given in envelopes.
- Flipping to pages in the record books for counter signature from the patients after the handover of the reports consumes time, thereby increases the waiting time for other patients.

3.8.1.4 Study of Total Time taken to complete Preventive Health Check Up

- Total Patients Observed is 15.
- The data is collected from the point the patient enters the preventive health check up clinic till the completion of entire process.

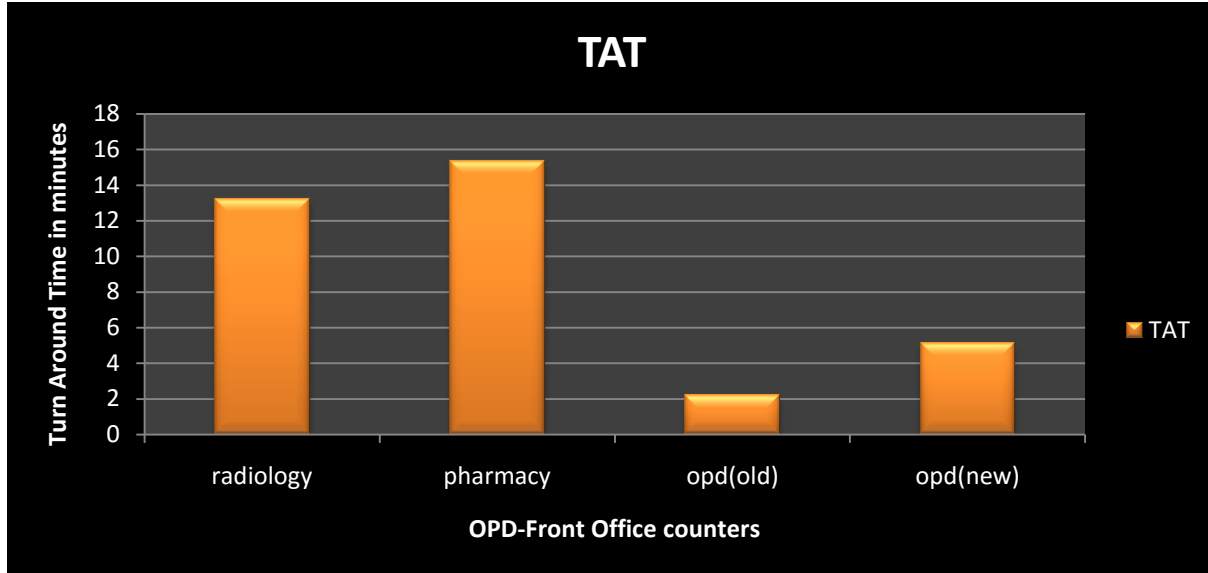
The graphical representation of the time taken by different Preventive Health Check up Plan:



Observations:

- Though prior information is given to the patients, still should be explained well about the requirements of Ultrasonography (USG).
- For the follow-ups, patient has to wait for the remaining consultations, especially Dietician.
- Patient has to move a lot around here and there in the hospital causing much of inconvenience.
- There is a comparatively long waiting time for ECG, TMT and due to which the patients have breakfast at lunchtime.
- For PFT, every time the technician has to be called that consumes times

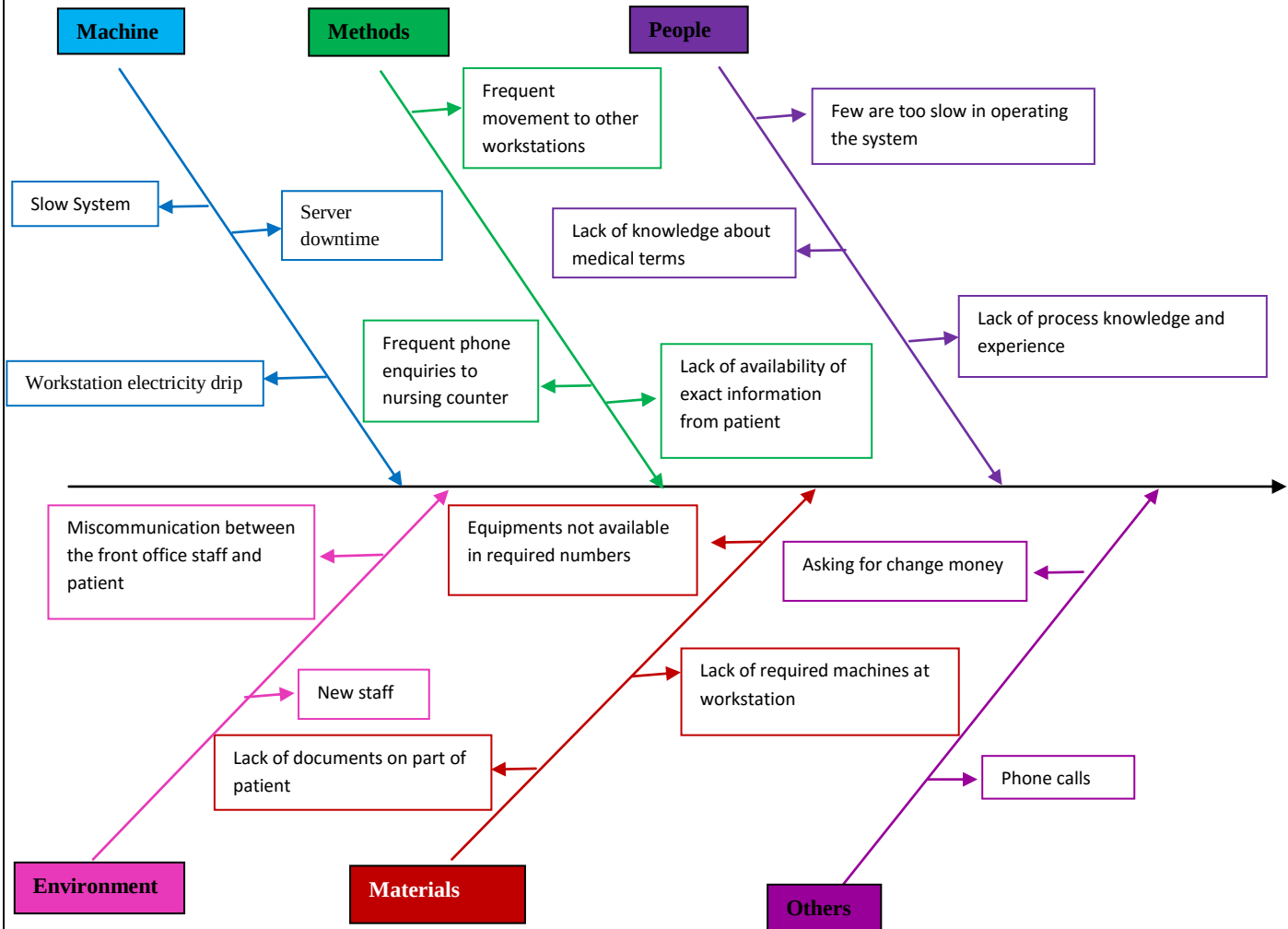
3.8.2 Snap Shot of Waiting Time of Various OPD-Front Office Counters



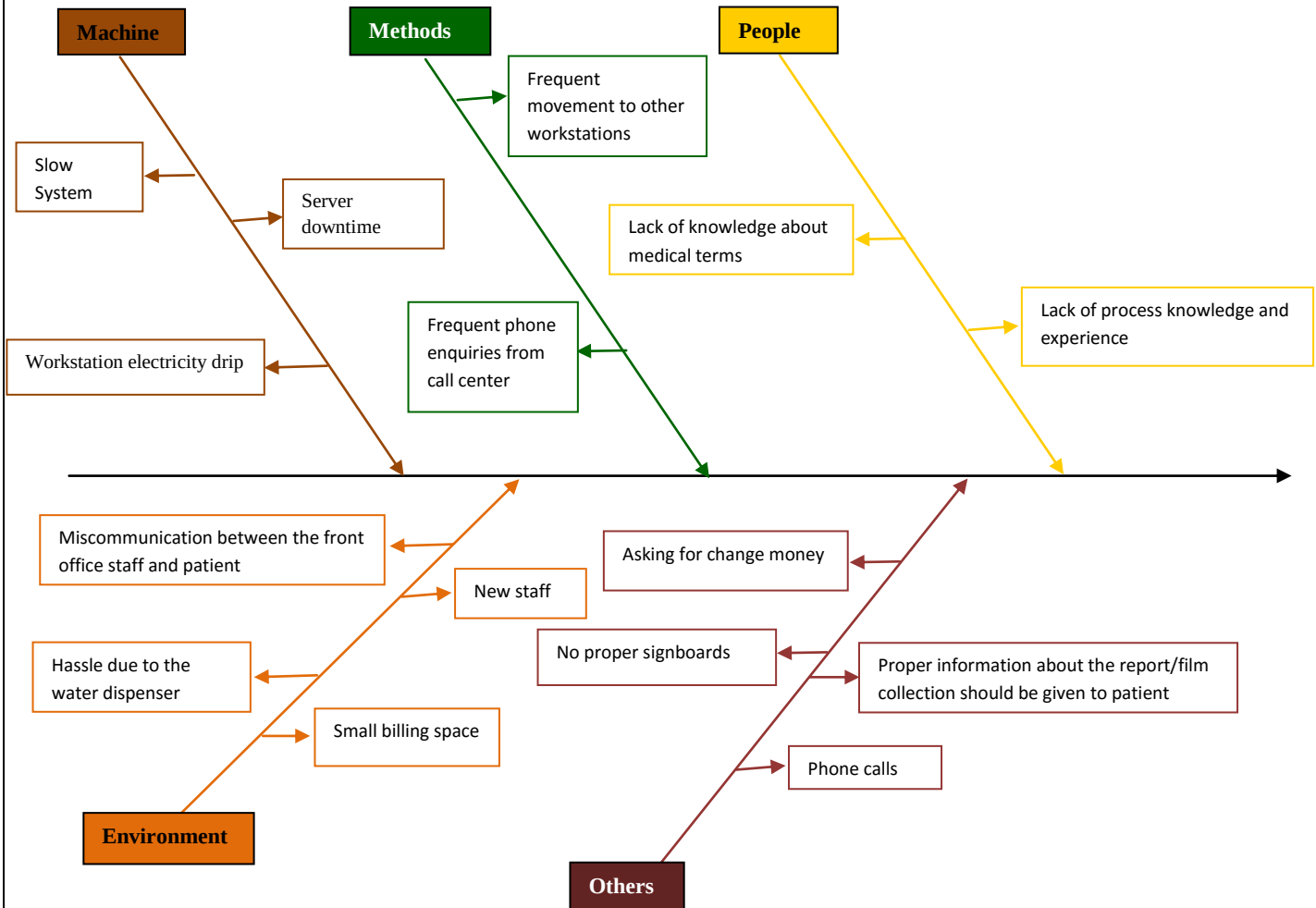
- It can be inferred that maximum time is being taken at the OP Pharmacy counter followed by the Radiology billing counter.

3.9. Analysis

3.9.1 Fish Bone analysis of OPD Registration and Billing



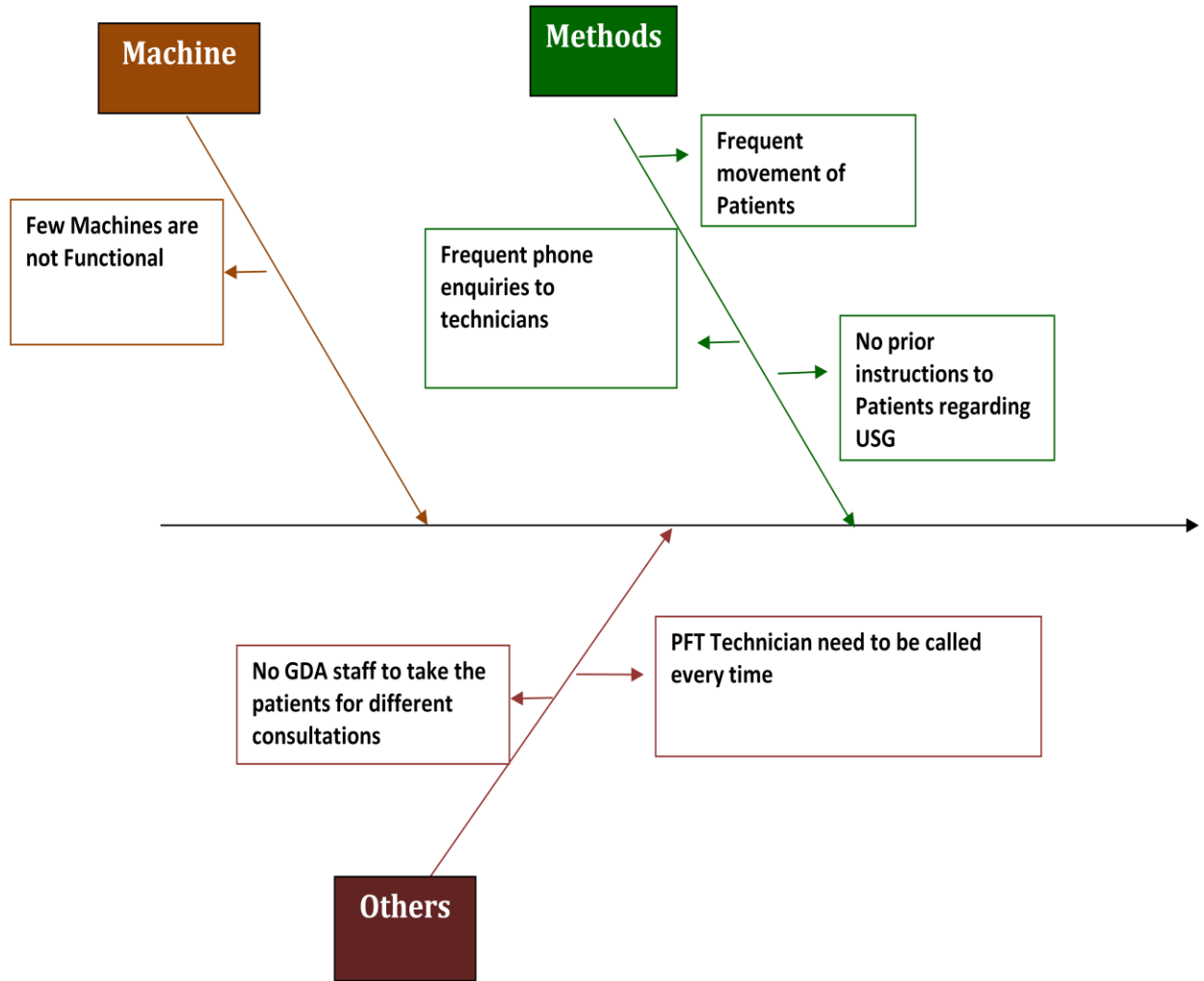
3.9.2 Fish Bone analysis of Radiology billing and acknowledging



3.9.3 Analysis of OP Pharmacy billing

- No queue formation
- Single counter billing

3.10 Analysis of Preventive Health Check Up



3.10. Improve

3.10.1 OP Registration and Billing

- Establishment of help desk at the OPD Front Office to cater the confused and helpless patient to direct them to different counters.
- Adequate training and hands on for staff on workstation.
- Proper display of detailed information regarding the required documents and the schemes available.
- Proper administration of the queuing system for patients.

10.2 Radiology and Report dispatch Counter

- Provision of email ids in the form itself so that reports can be mailed to the patient to avoid unnecessary hassle near the counter.

- There should be signboard for the report/film dispatch counter.
- Issuing of numbers to patients after billing is done to avoid rush at acknowledgement counter.
- The number display board should be working to avoid confusions and to reduce patients' apprehension regarding the wait time.
- Provision for different place for water dispenser
- The laboratory/radiology staff should update the system with various reports of the patients before asking patients to collect the reports to avoid inconvenience to both the patients as well as to the staff at the front office.
- The desk should be left only when some other person is given the responsibility of looking after.
- The staff should address the patient with more warmth, smile and convincingly to make patient more comfortable. All the patients should be greeted.
- Bookmarks/flags should be used in the record books to make it convenient and appear more organized and professional.

3.10.3 OP Pharmacy billing

- Proper use of barricades so as to enable in proper queue formation.
- Since multiple counters are available, they should be made functional.

3. 10.4 Preventive Health Checkup

- Since only one person co-ordinates with all the patients, it becomes inconvenient for the patient, though at times the general duty staff accompanies.
- Majority consultations should be at one place only so that patient does not have to run here and there.
- Along with telephonic instructions, patient should be given the same in mail or SMS.
- Investigations requiring fasting should be completed as soon as possible to avoid delay in breakfast especially in case of diabetic patient.
- Prior appointments should be scheduled for Eye and Dental checkups to avoid waiting time.

3.11. Control

To make the necessary required changes, adjustments, and then monitor to see how much improvement is made.

3.12. Limitations of the study:

- Project work conducted in a single hospital.
- Sample size may be insufficient.
- The study was concerned with only outpatient department, so it does not include the details of other department.
- Study done for short duration.

3.13. Conclusion

The study has brought to surface certain grey areas where the improvements can be done to improve the efficiency of the system and cater more and more to patients' satisfaction. Time wastage reduction by elimination of certain unnecessary movements can greatly improve the services of the OPD of the hospitals.

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