

**Summer Training at
Medanta the Medicity,
Gurgaon**

Studying Resource Efficiency of the Mobile Echo process

**By
Ayushka Chopra**

**Under the guidance of
Mr. Abhishek Dadhich**

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



**The IIHMR University, Jaipur
2016**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Ayushka Chopra**, student of MBA Hospital and Health Management from the IIHMR University, Jaipur has undergone summer training at Medanta The Medicity, Gurgaon from 1st April to 31st May, 2016.

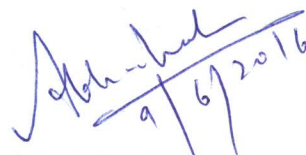
The Candidate has successfully carried out the study designated to her during summer training and her approach to the study has been sincere, scientific & analytical.

The Internship is in fulfilment of the course requirements.

I wish her all success in all her future endeavours.



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



Mr. Abhishek Dadhich
Assistant Professor
The IIHMR University, Jaipur

Date: 06th April 2016

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Ayushka Chopra** has completed her 2 months internship in the Department of Medical Administration from 01st April' 2016 to 31st May' 2016 with Global Health Private Ltd. (GHPL) Medanta - The Medicity.

- Project Title 1 - To study the resource efficiency of the Mobile Echo Process.
- Project Title 2 - To conduct the FMS Audit in the hospital.

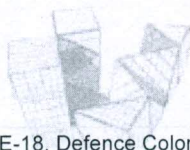
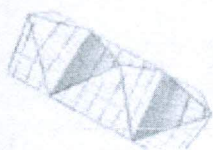
We wish her all the best for her future endeavors.

For GLOBAL HEALTH PVT LTD



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SENIOR VICE PRESIDENT & HEAD - HR



Acknowledgement

I, Dr.Ayushka Chopra, a student of MBAHM 20 at IIHMR Jaipur, would like to sincerely express my heartfelt gratitude to:

- Mr.PankajSahni, Chief Operating Officer, Medanta the Medicity, for granting me the opportunity for training.
- Dr.Awadhesh Kumar Dubey, Medical Superintendent, Medanta the Medicity, for granting me the opportunity for training.
- Dr.ShavetaDewan, Head of Department, Quality, Medanta the Medicity, for being my mentor and project guide for the entire period of my training, for helping me improve the quality of my work and for helping me identify areas where I lack and what characteristics I must develop in myself for a future as a hospital administrator for my project in the Quality Department.
- Dr.MeetuGarg, Manager, Quality, Medanta the Medicity, for guiding me to overcome the practical challenges in my project.
- Mr. Vishal Rao, Manager, Operations Control Center (OCC),MedantaTheMedicity, for helping me understand the project.
- Mr. .AbhishekDadhich, my mentor at IIHMR Jaipur, for his support and guidance, without which this training would not have been possible.
- Dr. Ashok Kaushik, Dean, Academic and Student Affairs, for his invaluable inputs and guidance for my projects, as they helped me to develop a line of thought for how to shape my project.
- Mr. HemBhargav, Dy. Registrar (Academics), IIHMR Jaipur, for facilitating my training at Medanta the Medicity.

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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1. ACRONYMS/ABBREVIATIONS

- BP: Blood Pressure
- CABG: Coronary Artery Bypass Graft
- Cath Lab: Catheterization Laboratory
- DSA Lab: Digital Subtraction Angiography Lab
- ERCP: Endoscopic Retrograde CholangioPancreatography
- EUS: Endoscopic Ultra Sound
- FMS: Facility Management and Safety
- GHPL : Global Health Care Private Limited
- Hb : Haemoglobin
- HAZMAT: Hazardous Materials
- IPD : In- Patient Department
- JCI: Joint Commission International
- MLC : Medico-Legal Cases
- MSDS: Material Safety Data Sheet
- OPD: Out-Patient Department
- OT : Operation Theatre
- POCU: Pre Operative Cardiac Unit
- PTCA: Per Cutaneous Transluminal Coronary Angioplasty
- RH +ve : Rhesus Factor Positive
- RH -ve : Rhesus Factor Negative
- RBC : Red Blood Cell
- UG Floor: Upper Ground Floor
- WB: Whole Blood

2.Observation Learning

2A.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 at Medanta – The Medicity, Gurgaon, there were numerous learning experiences. These were enhanced due to the projects undertaken at the hospital, which are listed as follows:

- A Study of the Resource Efficiency of the Mobile Echo process
- To conduct a Facility Management and Safety audit for the hospital facilities

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

2B.Organization Profile

Medanta the Medicity, a multi-super-specialty hospital, is one of India's largest healthcare projects in multi-specialty tertiary care medical treatment, and has been envisioned as an institute that will redefine standards of excellence in healthcare delivery by bringing together the best of infrastructure, technology, training, education and medical intelligentsia. With an investment of over \$350 million, Medanta the Medicity aims to create a world class education and training centre backed by remarkable infrastructure, futuristic technology and the extraordinary vision of the eminent cardiac surgeon, Dr Naresh Trehan – Chairman and Managing director of Global Health Private Limited (GHPL).

Located across 43 acres, Medanta is the new international healthcare destination in the National Capital Region of New Delhi – Gurgaon. Medicity is a 1250 bed medical institute at par with world standards. The objective of the Medicity is to bring in global healthcare delivery standards at affordable prices, while firmly placing India on the

international roadmap as a premier destination for healthcare services, medical research and high-end medical diagnostics.

Specialties covered

Medanta provides integrated primary, secondary and tertiary care services spanning over 29 super specialties and high-end services covering every aspect of human health, housing 10 Institutes, 8 Divisions and 11 Departments.

- Institutes
 - The Medanta Heart Institute.
 - The Medanta Institute of Neurosciences.
 - The Medanta Bone & Joint Institute.
 - The Medanta Kidney & Urology Institute.
 - The Medanta Cancer Institute.
 - The Medanta Institute of Digestive & Hepatobiliary Sciences.
 - The Medanta Institute of Minimally Invasive Surgeries.
 - The Medanta Institute of Transplant & Regenerative Medicine.
 - The Medanta Institute of Critical Care & Anaesthesiology.
 - The Vattikuti Institute of Robotic Surgery.
- Departments
 - Department of Clinical Immunology & Rheumatology.
 - Department of Pathology & Laboratory Medicine.
 - Department of General Surgery.
 - Department of Internal Medicine.
 - Department of Dental Surgery.
 - Department of Physiotherapy & Sleep Medicine.
 - Department of Transfusion Medicine (Blood Bank).
 - Department of Pediatric Gastroenterology, Hepatology & Liver Transplantation.
 - Department of ENT & Head Neck Surgery.
 - Department of Physiotherapy & Rehabilitation.
 - Department of Ophthalmology.
- Divisions
 - Division of Endocrinology & Diabetes.

- Division of GI & Bariatric Surgery.
- Division of ENT & Head Neck Surgery.
- Division of Peripheral Vascular & Endovascular Sciences.
- Division of Gynaecology&Gynaec-oncology.
- Medanta Breast Services.
- Division of Plastic, Aesthetic and Reconstructive Surgery.
- Division of Radiology & Nuclear Medicine

What is unique about Medanta the Medicity?

- Medanta aims to functionally integrate within one campus and one management, the facilities of medical care, teaching as well as research and development.
- It also offers to explore the possibility of integrating knowledge of traditional and alternative medicine with modern medicine, through means of scientific research.
- Medanta the Medicity is led by DrNareshTrehan, one of the leading luminaries in the medical world. DrTrehanis a recipient of various national and international awards for excellence, including the highest national awards, Padma Shri and Padma Bhushan, in recognition of his distinguished service to the nation.
- Dr.Trehan has also served as the personal surgeon of the President of India since 1991 and was formerly the President of the International Society for Minimally Invasive Cardiac Surgery (ISMIC)
- The Medicity team has attracted some of the most distinguished names in medical and non-medical fields from all over the world.

Infrastructure

Medanta-The Medicityis spread across 43 acres, has 45 operating theatres, 1250 beds and over 350 critical care beds

Education

An initiative is currently underway of building a full-fledged medical college, the objective of which will be to produce highly competent general physicians and specialists who would be socially sensitive and fully committed to the principles of medical ethics. This establishment would also make every attempt to erase the dividing line between clinical and non-clinical areas.

Research and Development

The Medicity will have a state-of-the-art research and development centre integrated with the hospital and the teaching establishment. It is planned to be one of the best funded, staffed and managed medical R&D centre in the country. Its Research Advisory Committee will consist of 12 members from amongst the best known names in modern biology, including various areas of medicine.

Traditional Medical practices

An important objective of Medicity is to validate- and integrate with modern medical system – those medical practices in our traditional and complimentary systems of medicine such as Ayurveda, Unani, Siddha, Tibetan and Tribal Systems that are compatible with science.

Vision and Values

‘The Institution is governed under the guiding principles of providing affordable medical services to patient with care, compassion and commitment

Technology

- 256 Slice CT
- Brain Suite, Intra-Operative Imaging Operating Theater
- Da Vinci Robot for Minimal Invasive Surgery
- Artis- Zeego Endovascular Surgical Cath Lab
- 4 Linear Accelerators (provision for IGRT/ IMRT) (Radiation Surgery)
- Tomotherapy
- Integrated Brachytherapy Unit with remote controlled HDR
- 3.0 Tesla MRI
- PET CT
- Gamma Camera
- Digital X-Ray, Fluoroscopy, Bone
- Densitometry
- 3D and 4D Ultra Sound
- Digital Mammography

Affiliations

- Medanta the Medicity has entered into a corporate alliance with 'Duke Medicine' with the objective of providing a platform for high end research practices and clinical trials.
- The Medanta Duke Research Institute (MDRI is a world class early phase clinical research facility at Medanta the Medicity. MDRI guarantees to offer an environment conducive for exploring the technologies of traditional medicines in synchronization with modern medicine aids for research and development in the areas of healthcare and health recovery.
- It is proposed to be a 60-bedded facility built in an area of 27,000 sq. ft. within the premises of Medanta. To unlock its potential, MDRI will be undertaking immediate early phase clinical studies in three countries with diverse populations.
- The results of such a research will be paramount for all subsequent studies that can play a decisive role in changing the face of healthcare across the world.

2C.Data Collection

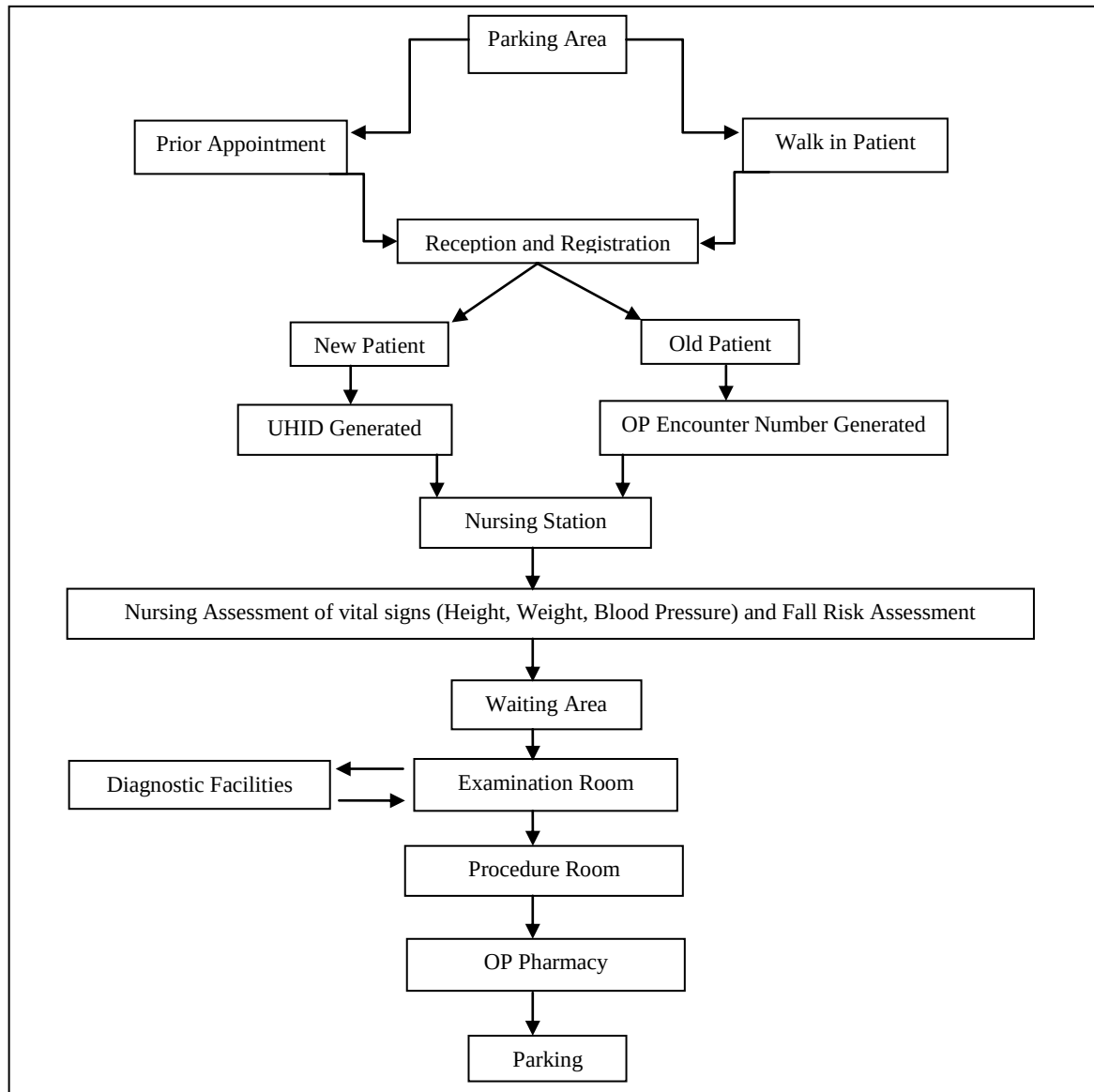
- With permission from the Senior Vice President of Medanta the Medicity, Mr.ArunDatta, and the Medical Superintendent, Dr.Awadhesh Kumar Dubey, we created a schedule, which we have followed in order to observe and learn the functioning of all the departments of the hospital. This task was made difficult due to the scale of operations being conducted at Medanta the Medicity, as we realized that a significant amount of time would have to be invested in each department in order to glean as much information as possible.
- After permission was secured and a schedule was made to observe the various departments of the hospital, we went and sought appointments from the concerned personnel in the various departments.
- Once these permissions were obtained, we got the details of personnel who would guide us in these departments.

2D.General Findings

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

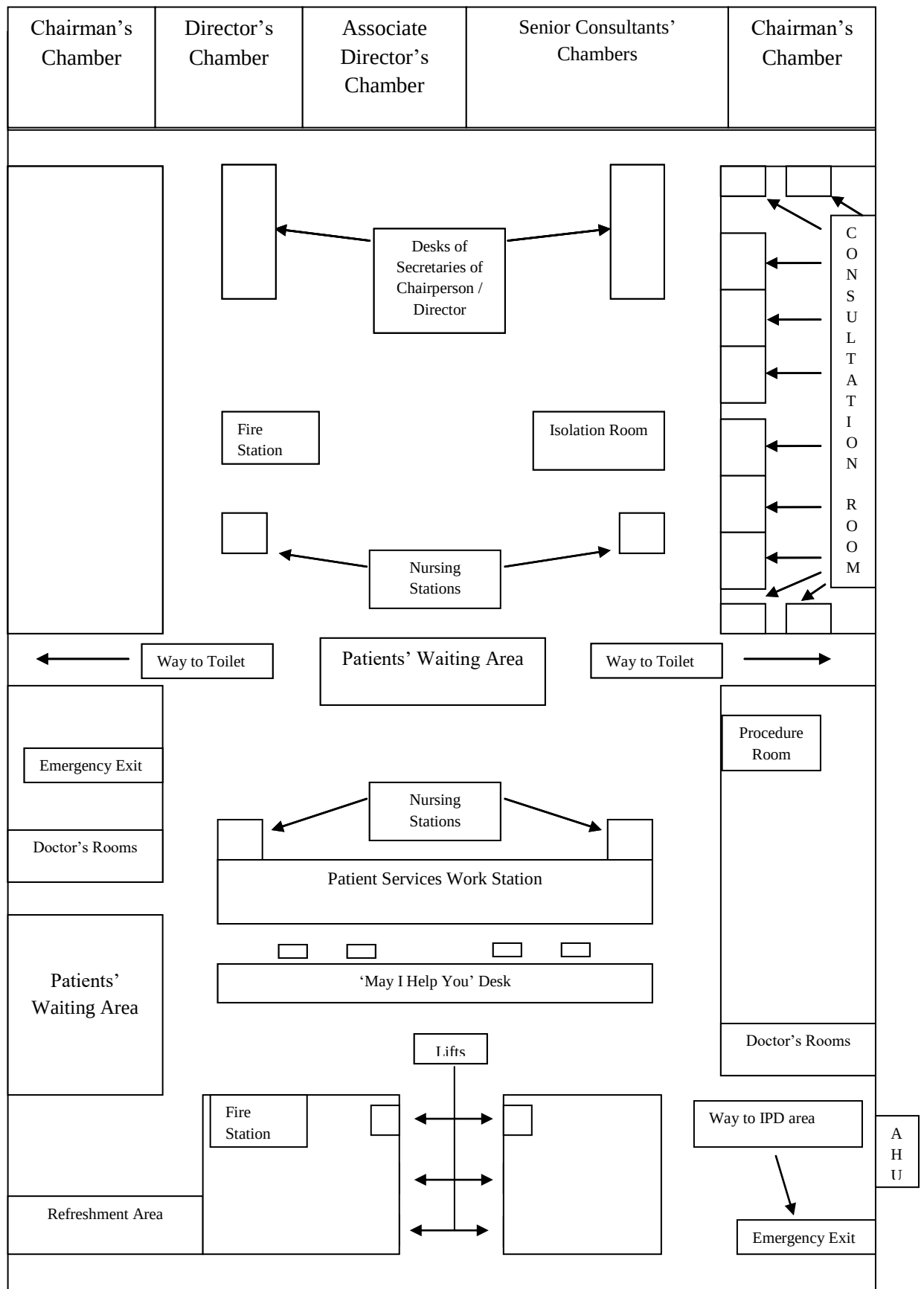
a) **OPD:**As has been mentioned earlier in this report, it can be said that each floor of Medanta houses a separate institute of clinical excellence. Each institute has its own OPD area as well as IPD area / day-care area wherever applicable. The general process flow that is followed in all the OPDs is as follows:

Figure 1: OPD Process Flow



The number of OPDs varies from institute to institute, but each OPD has approximately been planned in the same way. A sample layout of an OPD is as follows.

Figure 2: OPD Layout

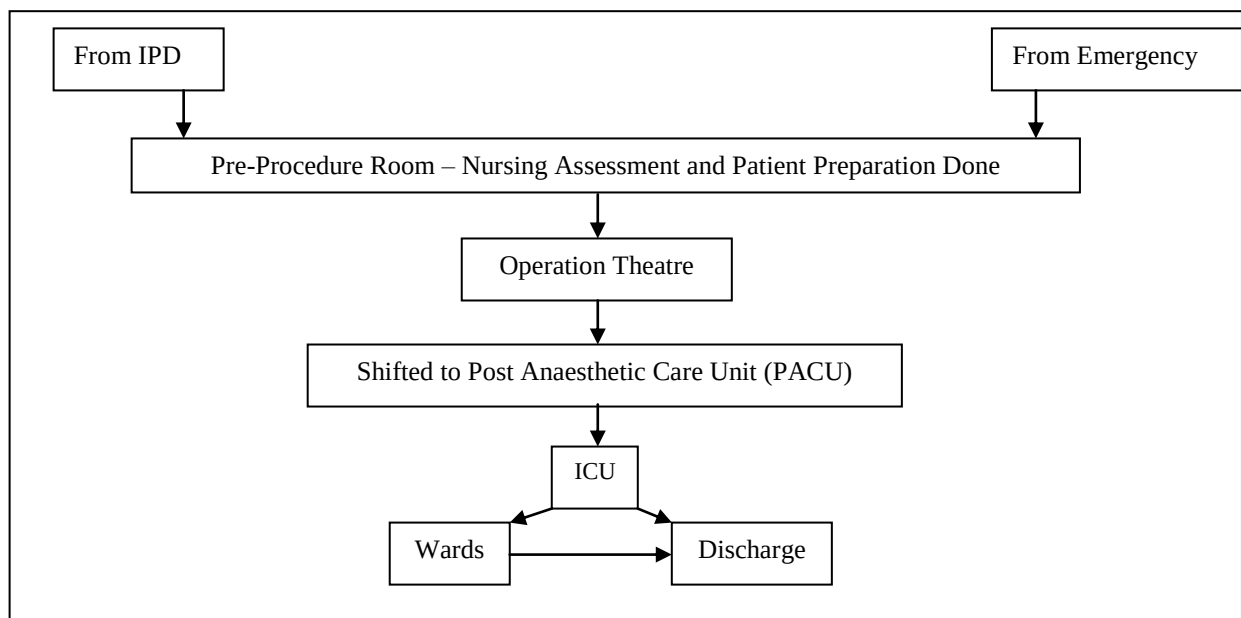


As mentioned earlier, each floor has its own OPD. However, the 10th floor and the 12th Floor have Day care facilities as well. Every floor has a procedure room and its own Front Desk. Appointments are centralized and are recorded on the Hospital Information Management System. As soon as appointments are fixed, a text message is sent to the patient confirming the appointment, and a reminder message is sent on the day before the appointment. No walk-in patient is turned away, and the staffs try to accommodate these patients between the appointments already scheduled for the day. The daily volume is of approximately 2000-2500 patients across all the OPDs. Each floor has the capacity to handle 70-100 patients waiting. For Chairpersons and senior doctors, a junior doctor does the initial assessment of the patient, which not only reduces the workload of the senior doctors (whose slots are always overbooked), but it also gives the junior doctors an opportunity to learn from the best brains in the industry.

b) Operation Theatre

There are currently 40 functional OTs. Around 70-80 surgeries are performed daily. The general flow of the patient in the OT is as follows.

Figure 3: Process Flow in OT



c) Blood Bank

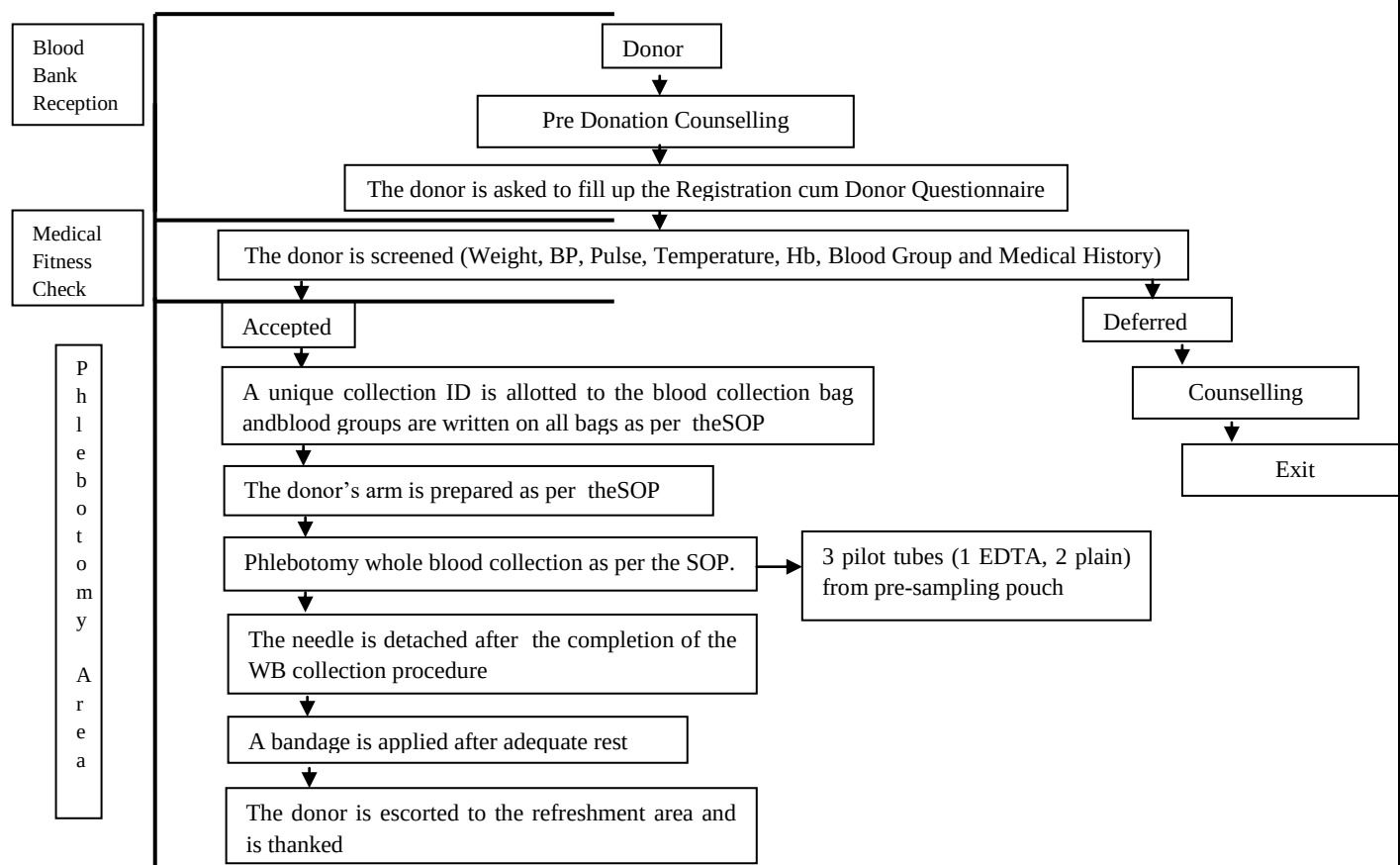
The licensing details of the Blood Bank at Medanta the Medicity are as follows:

Sr. No	Parameter	Details
1.	License Number	67-B (H)

2.	Date	30/11/2014
3.	Validity	5 years
4.	Name of the items on License	• Whole human blood. IP • Concentrate Human RBC (Packed RBC) IP • Platelets concentrates,USP • FFP,BP • Plateletpheresis / Leukapheresis using cell separator • Cryoprecipitate
5.	Name of the competent technical staff	• Blood bank officer • Technical supervisor • Technicians • Registered Nurse
6.	Licensing authority	Haryana State Drugs Controller Under section 1940, Form 28C- Rule 122-G

The Blood Bank of Medanta the Medicity is situated on the Upper Ground floor. Medanta has a policy of asking patients to arrange for a specific amount of blood before their procedures, so that there is no possibility of a situation arising where there is a shortage of blood during a procedure.

Figure 4: Process Flow of Blood Donation



Instead of beds, the blood donation area had couches where patients are asked to sit and the incline of reclining can be changed as per need. Blood donation consists of WB donation and Platelet Apheresis donation. After the whole blood is collected, the blood is split into separate components, and is stored in walk-in fridges after proper labelling. The blood bags are labelled according to the following legend:

Sr. No	Blood Group	Label Colour
1.	B	Red/ Pink
2.	A	Yellow
3.	O	Blue
4.	AB	White
5.	RH +ve	Black
6.	RH –ve	White

After splitting, the individual components can be stored for differing periods of time. Whole blood can be stored for 35-42 days, platelets can be stored for 5 days in agitators at temperature of 22 degrees Celsius, Fresh Frozen Plasma can be stored for up to 1year at a temperature below -50degrees Celsius and RBC can be stored for 4-6 days.

d) Emergency Department

The Emergency Department of Medanta the Medicity is situated on the Upper Ground floor, and the entrance is from a route different than the main entrance to the hospital. The rough layout of the Emergency Department is shown below.

The Emergency Department at Medanta the Medicity receives about 100 cases per day. It is divided into areas as has been enumerated below.

S.No.	Area	Specifications			
		No. of cubicles	No. of beds + trolleys	Mortalities /month	Others
1	Triage	10	10+10	3-9	-
2	Observational area	08	08+08	10-12	-
3	Day care	06	06+02	NIL	Recliners - 04
4	Heart command	19	19+00	15-16	-
5	Procedure room	-	01+01	-	-
6	Emergency OT	-	-	Variable	OT's- 2

Figure5: Layout of Emergency Department

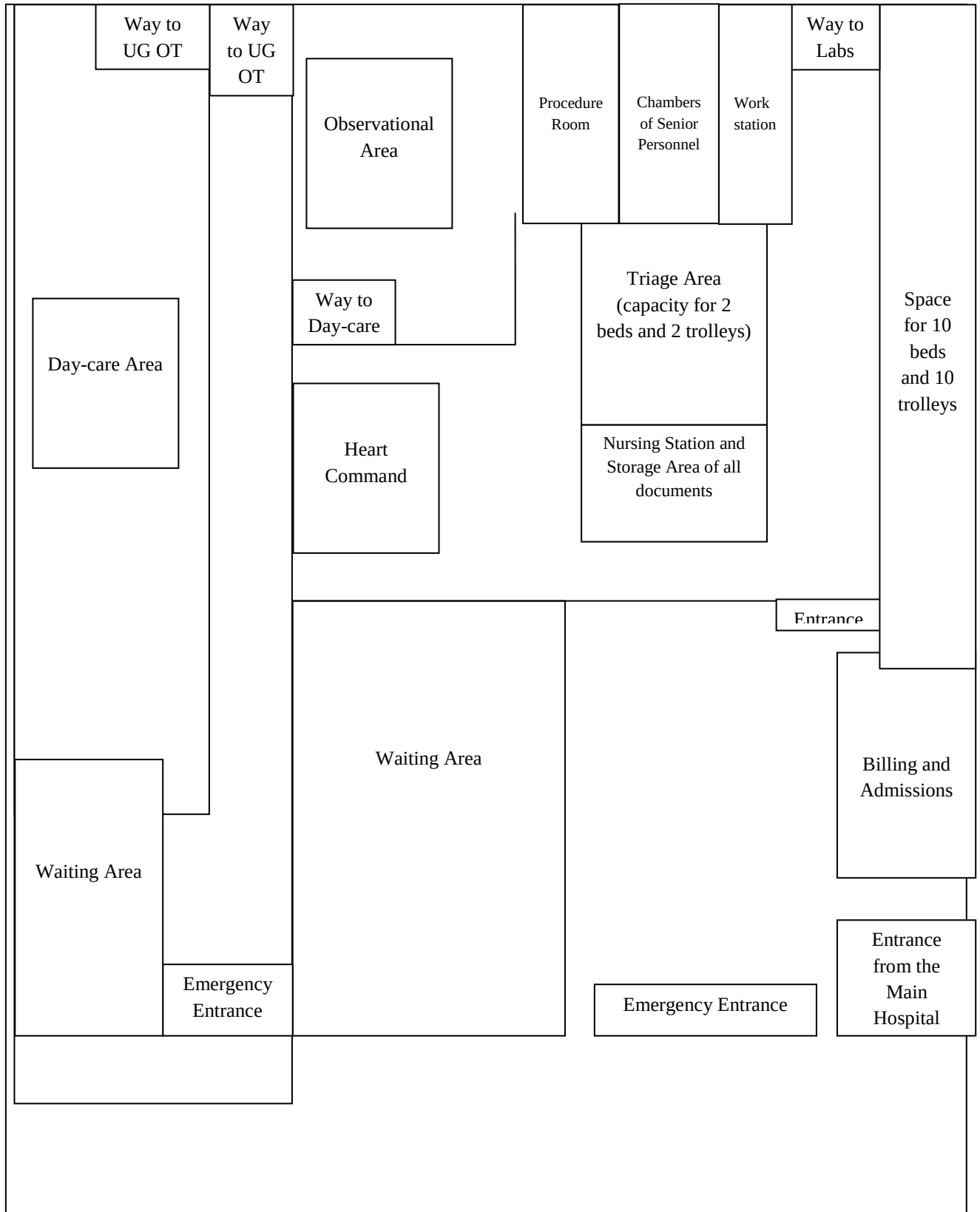
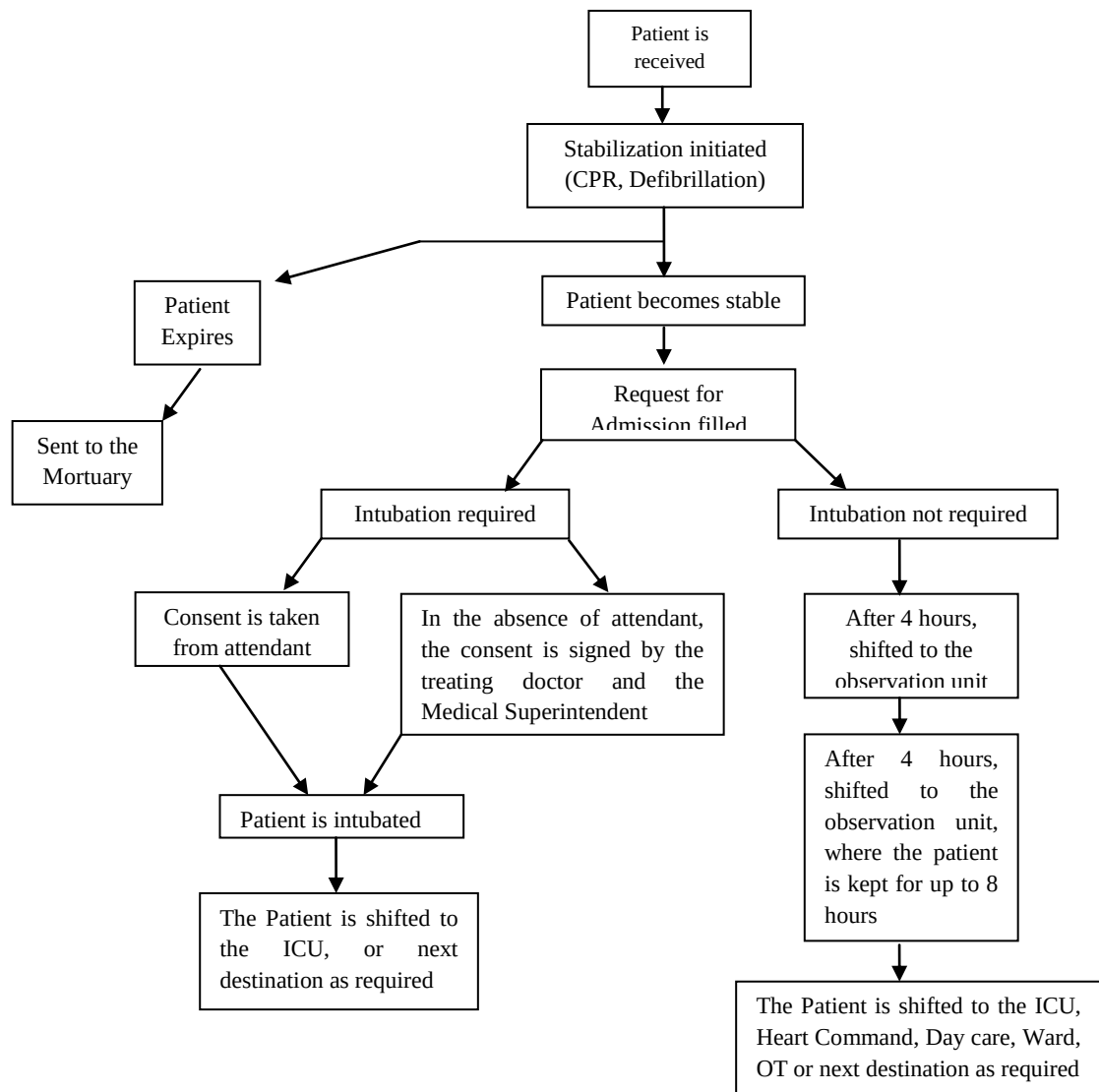


Figure6: Process Flow of Emergency Department



The patients coming in to the emergency department are triaged according to the Australasian Triage Scale. These patients are then allotted wrist bands for colour identification according to the parameters that have been enumerated below.

COLOR	INDICATION
White Band	Inpatient
Red Band	Allergy
Yellow Band	Diabetes/Kidney disease No I/V prick No measurement of BP
Blue Band	Vulnerable/ High Risk patients

The Emergency Department of Medanta the Medicity offers ambulatory services, the details of which have been enumerated below.

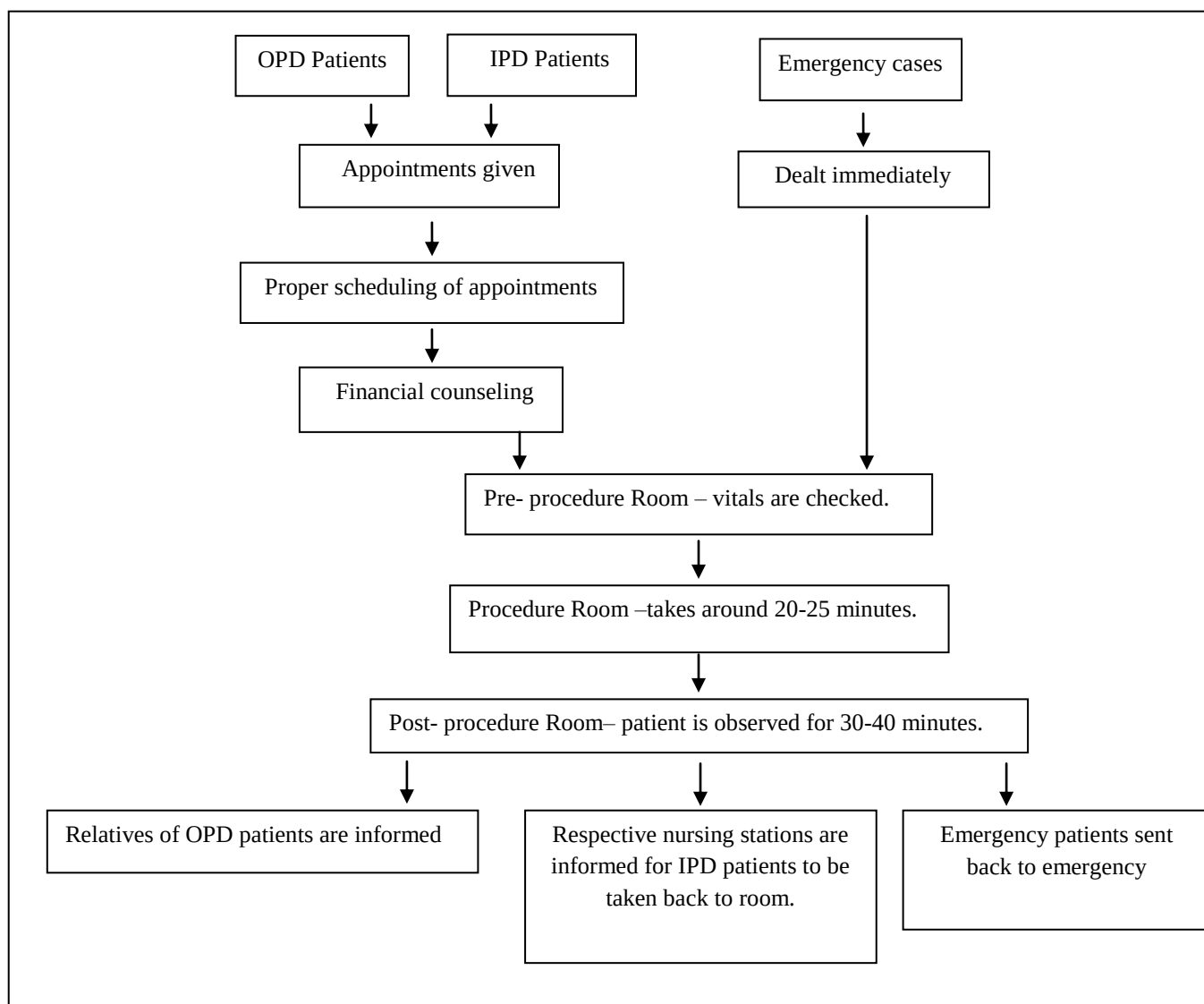
Sr. No	Parameters	Details
1.	Number of Ambulances	8
2.	Types of Ambulances	• Basic life support • Advanced life support • Air Ambulances
3.	Air Ambulance	• Non Scheduled passenger air ambulance • 40-50 patients are brought in by through this method every month
4.	Air Ambulance Staff	• Anesthetist • Cardiologist • Emergency medical officer • Nurse

e) Endoscopy

This department is situated on the 11th floor of Medanta the Medicity. On an average, 40-50 procedures are carried out per day, the details of which are as follows:

- 20-25 are endoscopy
- 10-12 are colonoscopy,
- 5-8 are EUS
- 5-8 are ERCP's.

Total time taken for endoscopy inclusive of the patient preparation time is around 45 minutes in which the procedure time of endoscopy is actually just 5 minutes. For EUS, the procedure time is 30-40 minutes and for ERCP the procedure time is 20-30 minutes. The process flow for this department is as follows:



f) Radiology

The Radiology department is situated on the upper ground floor of Medanta the Medicity. The general process flow of the Radiology Department is as has been enumerated below.

g) CSSD

The Central Sterile Supply Department of Medanta the Medicity is situated on the lower ground floor. It is spread over an area of 1250 sqft and is the biggest CSSD in the Asia Pacific region. This CSSD is capable of catering to all the requirements of the hospital. The various areas of the CSSD, along with a list of the activities that take place in each department are as have been enumerated below.

Sr. No	Area	Functions
1.	Receiving Area	All the infected instruments are received and their quantity is verified.
		They are washed under water and in ultrasonic cleaners.
		These instruments are then dried with an air gun and subsequently put in a Yorco oven for complete drying.
		All instruments are then put into a washer-disinfection machine. This machine is equipped with double doors in order to facilitate collection directly from the processing area.
2.	Processing Area	This area receives cleaned instruments and in this area, the instruments are separated by the personnel according to the checklists.
		The instruments thus separated are put into trays which are wrapped with a double layer for infection control.
		These trays are then labelled and thrium indicators are put on these trays as a measure of the quality of sterilization.
		The sterilization method is selected according to the instruments in question. The methods of sterilization that may be used are LTSF (low temperature steam formaldehyde) or Plasma Sterilization.
3.	Sterile Area	All the sterilized instruments are collected in the sterile zone through the doors of the sterilization equipment opening in that area.
		These equipments are separated according as per the quantities received from each department and are put on separate racks.
		Low temperature and positive pressure is maintained in this area for infection control.
4.	Issue Area	Instruments are sent to the OT directly from the sterile area through a lift in the issue area to prevent any kind of cross contamination.
		All the other instruments are loaded on to covered trolleys and are then sent to the issue areas of specific departments, to be issued as and when required.

h) Dietetics, and Food and Beverages

These offices are situated in the lower ground floor of Medanta the Medicity. These departments are tasked with managing the dietary needs of the patients coming into the hospital. This task is made all the more difficult by the fact that the hospital caters to the needs of over 1200 patients (beds) per day. The enormity of this task can be appreciated by the fact that most five star hotels are able to handle only up to 600 clients per day, and the Food and Beverages Department of this hospital has to be able to serve close to 7000 meals per day.

In order to be able to cater to the delicate yet crucial needs of all the patients coming in to the hospital, most of the Food and Beverage functions are outsourced (the company to which the functions are outsourced shall hence be referred to as the 'Partnering Company'). All heavy equipments in the kitchen are property of GHPL Pvt. Ltd, and the Partnering Company has the responsibility of bringing in only light equipment like cutting knives, etc. All such light equipment are colour coded in order to prevent cross-contamination, so, for example, the equipment used for cutting poultry (coded yellow) will not be used for cutting fish (coded blue).

With respect to ensuring quality of services, GHPL Pvt. Ltd maintains service level agreements with the Partnering Company, and both strive jointly towards maintaining the quality standards. Both GHPL Pvt. Ltd. and the Partnering Company have representatives present on each floor, and these representatives jointly keep a check on any issue that may crop up on a floor.

The Dietetics department is tasked with the specialized function of ensuring that a patient is not presented with a meal that may not be in compliance with the treatment that the patient has come to Medanta for. To be able to deliver on this front, the dietician's role includes checking the diet of all the patients periodically, going on rounds of the patients with the chairpersons, solving patient queries related to diets, planning the diets of the patients and coordinating with the kitchen in order to ensure the provision of the right quality food to the patients.

Finally, these departments also maintain a chart of the amount of food wasted per day (wasted food is discarded) and thus, a strict control is maintained on the inventory of all food items.

i) Marketing

This department is situated on the lower ground floor of Medanta the Medicity. The chief function of this department, as the name suggests, is to market the services of Medanta the Medicity.

Medanta is now at such a stage of its life cycle that it need not indulge in extensive marketing activities. Medanta the Medicity is a brand name recognized internationally, which is evident from its large international patient base. In fact, this brand is so well known that Medanta the Medicity has not even invested in large billboards (to be erected on top of the building) and does not spend too much on Out-Of-Home advertising. This hospital does have a strong presence on Facebook, and is followed on Facebook by many. This uniqueness of the hospital lies in the services that it offers, and the quality of services offered. This is why most of the marketing that this hospital enjoys is through 'word of mouth'. The clinical team employed at Medanta the Medicity is among the finest in the Asia Pacific region, and the technology used here is among the finest in the world. All these factors have come together to make Medanta the Medicity the strong brand it is.

A majority of the activities of the marketing department comprise of CSR initiatives. Medanta the Medicity has partnered with a number of charitable organizations and conducts periodic camps in various areas. Medanta has acquired a mobile van titled 'Sanjeevan', which is used to carry out camps in distant areas. This van is equipped with all modern diagnostic facilities, and includes equipment for Mammography, X-Ray and other facilities.

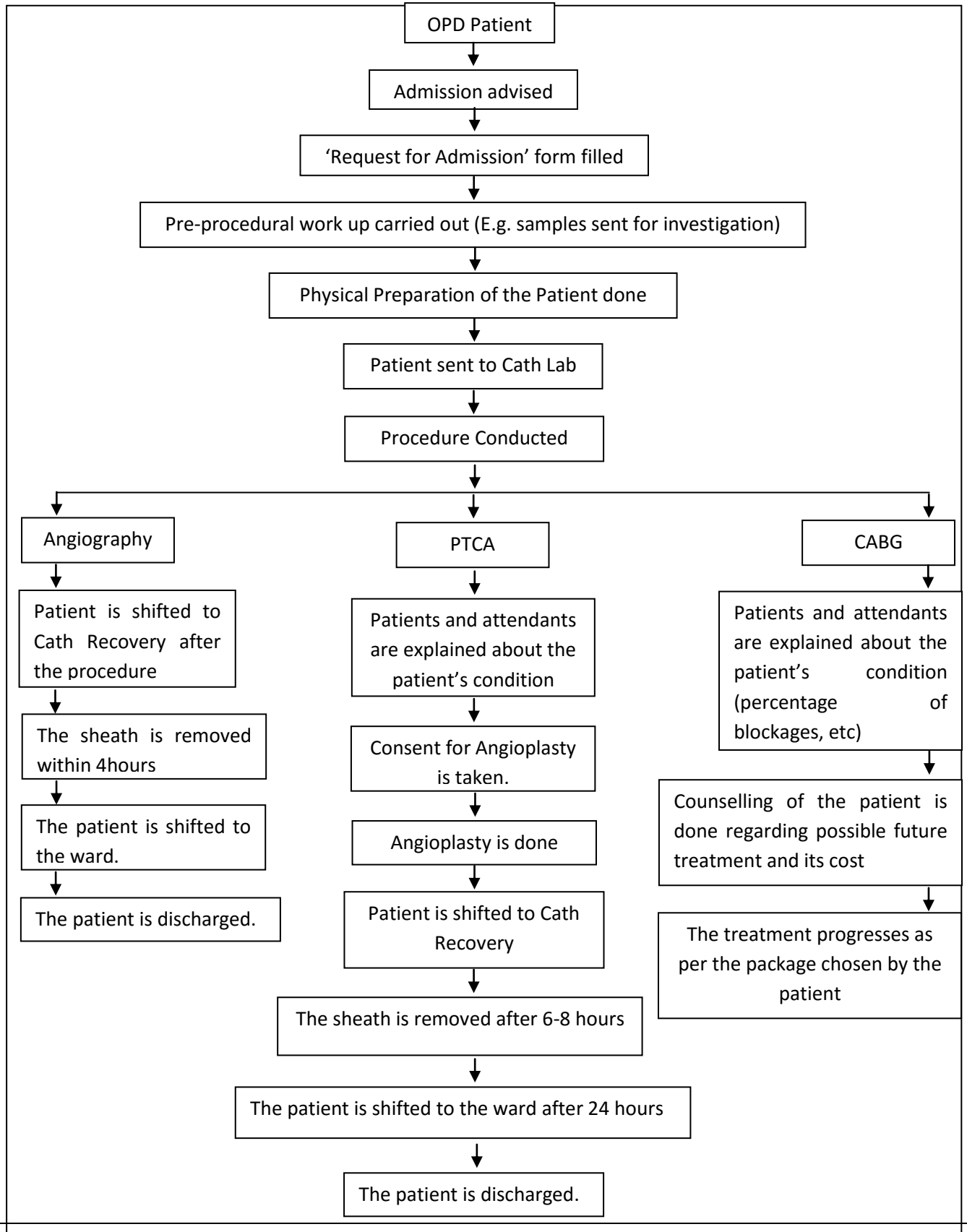
j) Engineering

The Engineering department is situated on the first basement of Medanta the Medicity. This department is responsible for catering to all the electrical needs of the entire hospital. The Engineering department is responsible for centrally providing water, electricity and air to the entire hospital. Eighty percent of the Engineering Department is outsourced, and the staff employed by Medanta the Medicity is tasked with supervising the functions of the outsourced staff and ensuring that quality work is delivered, as these requirements of water, electricity and air are crucial to any enterprise, and especially in hospitals.

The engineering department of Medanta the Medicity has employed 6 generators of 2000kva, to provide electricity back-up to the entire hospital.

k) Cath Lab: The Cardiac Cath Lab is situated on the third floor in the IPD area. There are a total of four Cath Labs and one DSA Lab. The flow of the Cath Lab takes place through the POCU, the Cath Lab and the Cath Lab recovery area as has been enumerated below.

Figure8: Process Flow



l) Radiation Oncology

This department is situated on the lower ground floor. It has an Integrated Brachytherapy Unit (IBU) for intra operative and post-operative treatments for cancer related to the cervix and soft tissue sarcomas along with prostate seed implants. The procedure rooms have been made keeping in mind the AERB (Atomic energy regulatory board) standards.

Innovative techniques such as Robotic Radio Surgery with the world's first Cyberknife VSI system; Image Guided Radiotherapy (IGRT) with X-Ray Volume Imaging are some of the super-specialty treatments offered by this department of Medanta the Medicity.

m) Intensive Care Unit

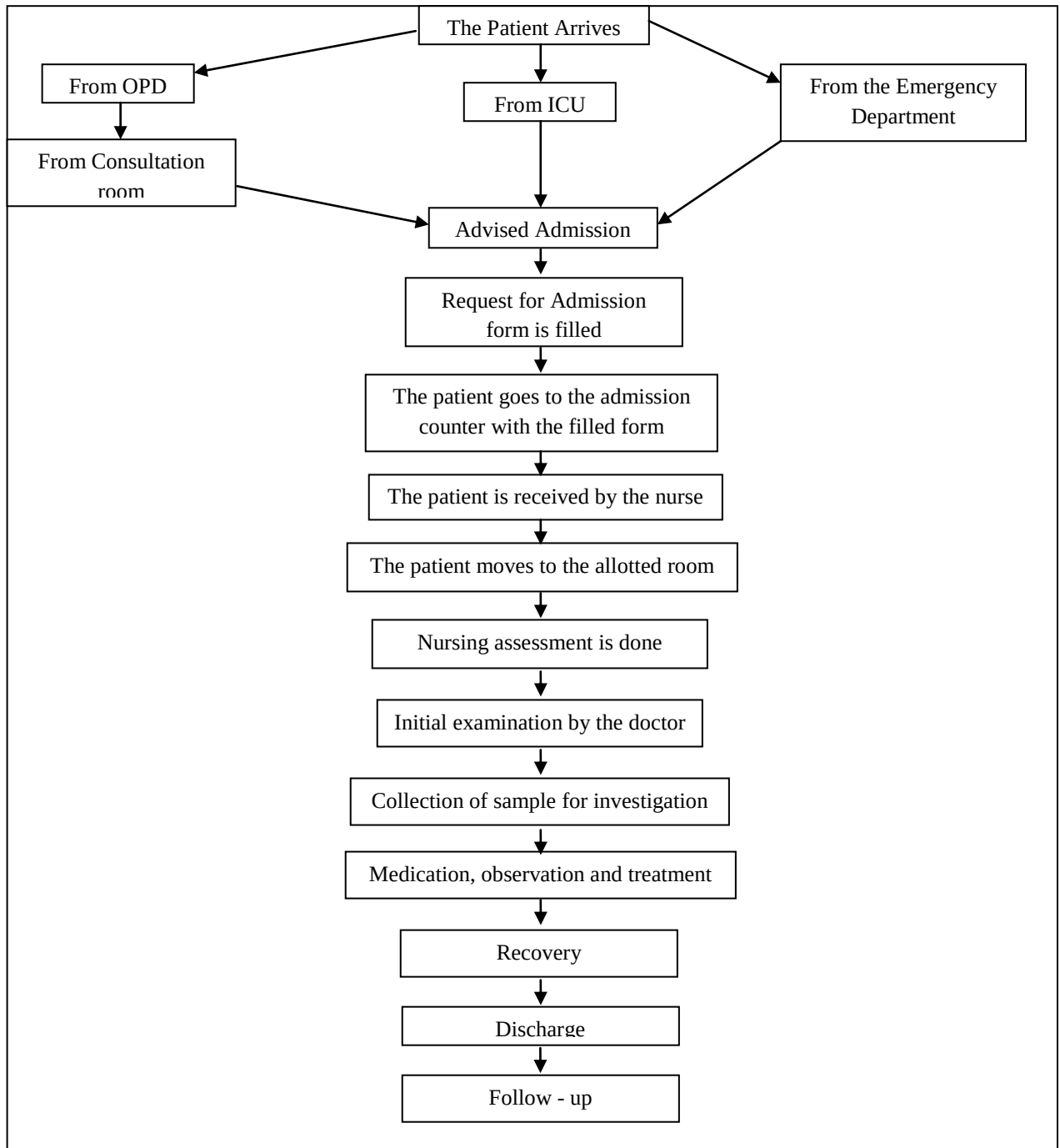
The distribution of the Intensive Care Units of Medanta the Medicity is as has been enumerated below.

ICU Number	Details
ICU 1	22 beds, (16 for Cardiac and 6 for Pediatric)
ICU 2	22 beds, (CTVS)
ICU 3	22 beds, (General 10, Neuro Surgery 10, Dialysis 2)
ICU 4	22 beds, (liver Transplant 8, Gastro+GI 14)
ICU 5	24 beds, (Medical ICU 18, General Paediatrics 6)
Ortho ICU	12 beds
HCC	18 beds
ICCU	22 beds, (CTVS 12, Cardiac 4, Kidney Transplant 6)
Pre and Post Cath Lab	26
HDU	10th floor (10 beds)
	Total Beds = 200 beds

n) In-Patient Department

Each clinical institute of Medanta the Medicity has its own In-Patient Department. Thus, there is an In-Patient Department in each floor of Medanta the Medicity. The general process flow is as has been enumerated below.

Figure 9: Process Flow of IPD



o) Medical Records Department

The Medical Records Department of Medanta the Medicity is situated on the lower ground floor of the hospital. This department is tasked with storing all the physical medical records generated in the hospital. Once a medical record is received by the department, a unique reference number is generated through Microsoft Excel, and the medical record is stored according to this number. MLC records are stored in a yellow file, and the records of expired patients are stored in a red file.

The Medical Records Department maintains the records of each patient file it receives for a period of 5 years. During this period, if a certain file is requested for reference/research purposes by any department of the hospital, the clock of storage is restarted. Apart from these functions, the personnel of the Medical Records Department may also be required to attend to calls from the courts of law, with the files of any patient as and when required.

p) In-Patient Pharmacy

The In-Patient Pharmacy of Medanta the Medicity is situated on the lower ground floor. This department is tasked with handling the responsibility of helping ensure that the correct medication is available with the IPDs of all clinical departments at all times. The medicines procured by the In-Patient Pharmacy are decided by the Pharmacy and Therapeutic Committee of this hospital.

The IPDs of all departments use a system of indenting to procure medication. These indents are sent to the In-Patient Pharmacy as and when required by the IPD. The indents are then ranked according to urgency by the dispensing pharmacist and these medicines are taken out from the stores and the change in quantity of the inventory these medicines is recorded by the pharmacist.

There are 4 types of licenses maintained by this department, obtained from the Excise Office, Gurgaon, with regard to the retail and wholesale of the following:

- Narcotics
- Denatured Spirit
- Morphine
- Fenetanyl (2ml and 10ml)

The In-Patient Pharmacy department maintains 16 days worth inventory of medicines with it for emergencies, and ensures that medicines are returned to vendors 3 months prior to their expiry.

q) Dialysis

The Dialysis unit is situated on the 12th floor. There are 12 dialysis machines and the number of cases done per day is around 55 cases (45 OPD + 10 IPD)

r) Housekeeping

This office of this department is situated on the lower ground floor of Medanta the Medicity, and is tasked with managing the sanitation needs of the patients coming into the hospital. This task is made all the more difficult by the fact that the hospital caters to the needs of over 1200 patients (beds) per day. The enormity of this task can be appreciated by the fact that most five star hotels are able to handle only up to 600 clients per day.

In order to be able to cater to the delicate yet crucial needs of all the patients coming in to the hospital, most of the Housekeeping functions are outsourced (the company to which the functions are outsourced shall hence be referred to as the 'Partnering Company'). All the cleaning material is the property of GHPL Pvt. Ltd. The Stores of Medanta the Medicity issue cleaning material to the personnel on the different floors as per levels decided through an exercise that was conducted, to ensure that such material is not wasted. Any extra requirement requires permission and explanation. This exercise had been conducted to determine the room-wise and floor-wise requirement of cleaning inventory.

With respect to ensuring quality of services, GHPL Pvt. Ltd maintains service level agreements with the Partnering Company, and both strive jointly towards maintaining the quality standards. Both GHPL Pvt. Ltd. and the Partnering Company have representatives present on each floor, and these representatives jointly keep a check on any issue that may crop up on a floor.

s) Medical Gases

This department is situated on the first basement of Medanta the Medicity. This department's chief responsibility is to ensure the timely provision of all the medical gases wherever they may be required. This department is responsible for the inventory control of the following gases:

- Oxygen
- Carbon Dioxide
- Nitrous Oxide
- Vacuum (for suction purposes)
- Medical Air

This department is also responsible for maintaining inventories of the cylinders that may be used during patient transport. The colour coding of these cylinders is as has been enumerated below.

Sr. No	Item	Colour Code Used
1.	Oxygen	White
2.	Nitrous Oxide	Blue
3.	Vacuum	Yellow
4.	Medical Air	Black
5.	Carbon Dioxide	Grey

The cylinders have a black body, but the top of the cylinder of the cylinder is painted according to the above legend. The pipes used for transporting these gases within the hospital also follow the above colour coding.

3. Specific Project Learning

These projects were assigned to me by Dr. Shaveta Dewan (Head of Quality Department, Medanta).

I. Facility Management and Safety Audit of the hospital facilities:

INTRODUCTION:

A FACILITY AUDIT is a comprehensive review of a facility's assets. They are a standard method for establishing baseline information about the components, policies, and procedures of a new or existing facility. An audit is a way of determining the "status" of the facility at a given time-that is, it provides a snapshot of how the various systems and components are operating.

FACILITY AUDITS are important because they:

- Help planners, managers, and staff know what they have, its condition, service history, maintenance needs, and location.
- Establish a baseline for measuring facilities maintenance progress.
- Provide facts, not guesswork, to inform plans for maintaining and improving facilities.

OBJECTIVE:

- To find the non-compliant areas in the facilities of the hospital.
- To plan Interventions and give recommendations.

METHODOLOGY:

- *Study type:* Observational Descriptive study
- *Study Area:* 5th Floor, 6th Floor, 7th Floor, 8th Floor, 9th Floor, 10th Floor, 11th Floor, 12th Floor, ICUs (1-10), Observation, Heart Command Centre, Emergency and Daycare
- *Study Duration:* April 7, 2016- April 22, 2016
- *Data collection:* Primary data collection through direct observations and interactions with the staff, noted in a customised checklist
- *Sampling Method:* Convenient Sampling

The procedure followed is enumerated below:

- **UNDERSTANDING** the current scenario
- **IDENTIFYING** the problem areas
- **ANALYSING** the relevant data
- **INTERPRETATION** of analysis outcomes
- **RECOMMENDATIONS**

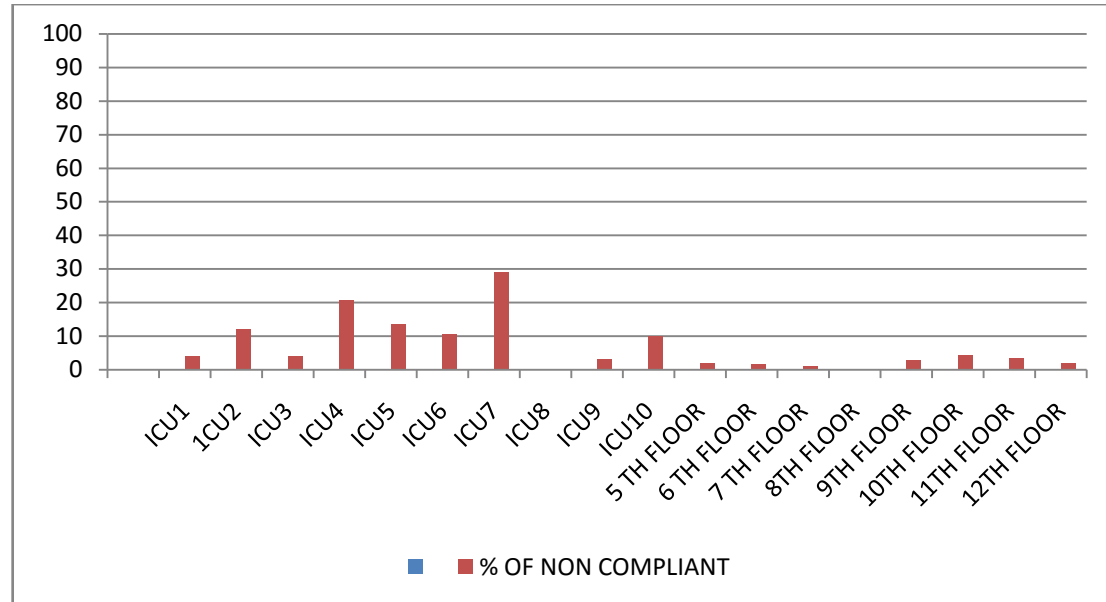
In the FMS AUDIT conducted for the month of April 2016, the IPDs, OPDs and the ICUs were assessed under the following parameters:

- Fire safety
- Hospital Safety
- HAZMAT
- Biomedical Equipment
- Engineering

OBSERVATIONS AND DATA ANALYSIS:

I. FIRE SAFETY:

Area-wise percentage of non-compliance in fire safety is shown below:



- Majority of the non-compliance regarding Fire safety was found in ICU7.
- Non-compliance was observed under staff knowledge

The observations regarding the fire safety were made under the following categories:

- Signage
- Fire hose
- Fire extinguisher
- Refuge Area
- Equipment room
- Fire Exits
- Staff knowledge

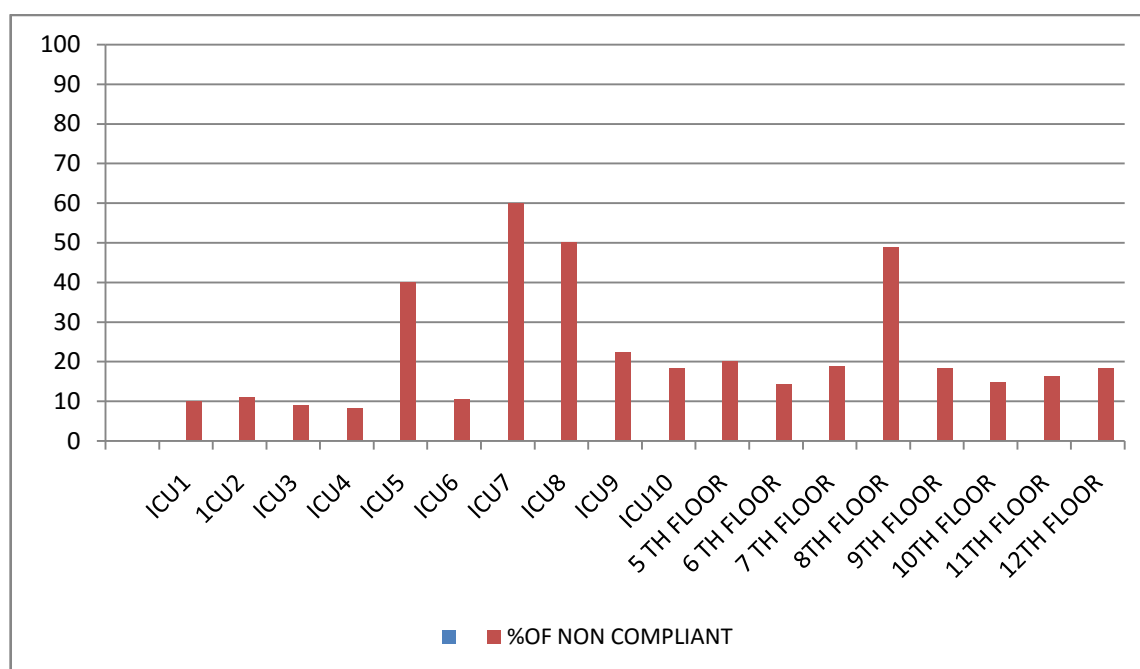
Staff Knowledge was assessed on following questions:

- Staff knows the code number for fire
- Staff knows how to operate fire extinguisher
- Staff knows where is the oxygen shut off valve
- Staff knows if oxygen is shut off how to take care of patients who need oxygen
- Staff knows what is the process of evacuating the patients

- If there was a fire, what would you do?
- Where is the Emergency assembly area?

II. HAZMAT:

Area-wise percentage of non-compliance in hazmat:



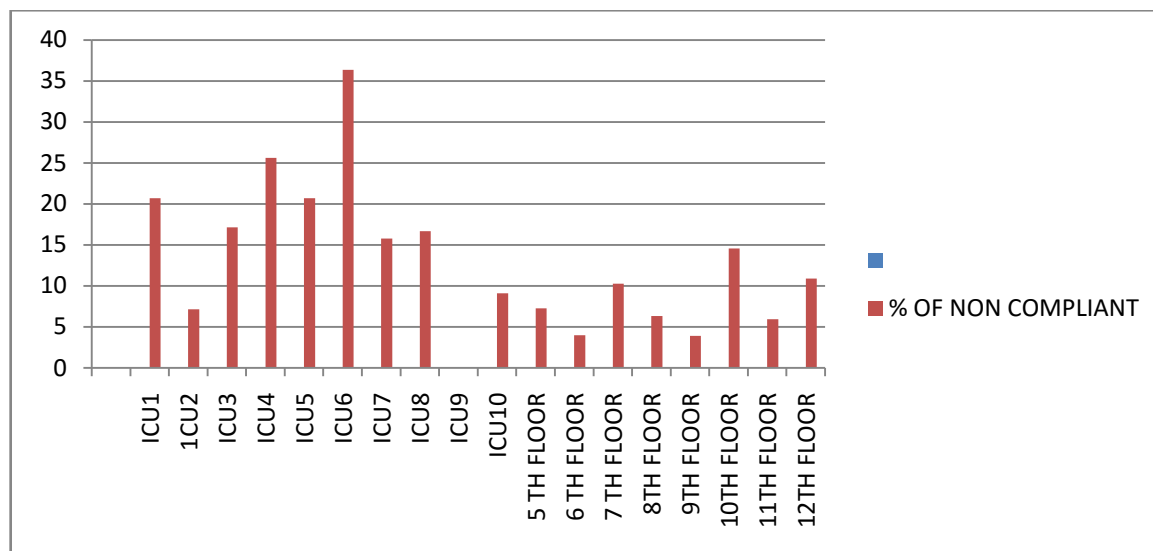
The HAZMAT was assessed under the following categories::

Category	Parameters
Storage	HAZMAT Chemical are stored have a label "For HAZMAT only"
	Opened primary containers have a label containing date of opening and date of expiry (check any 3)
	Secondary container is labelled with 'For HAZMAT use only' with a yellow colored hazmat label
	MSDS is available with the department for all chemicals present there
	HAZMAT spill kit is available on the location and content list is pasted
	Contents in the kit match the list
Staff Knowledge	How to manage a major spill?

- MSDS (Material Safety Data Sheet) was not updated in any of the department since August 2013. This shows 100% non-compliance in MSDS.
- The observations also reflected that there was < 50% compliance in the knowledge regarding how to manage a major hazmat spill.

III. HOSPITAL SAFETY:

Area-wise percentage of non-compliance in hospital safety:



The HOSPITAL SAFETY was assessed under the following categories:

CATEGORY	PARAMETERS
Access safety	Security guard deployed at the entry of all patient care area
Room safety	Patient medication drawers are locked and locks are functional (Check any 3)
Employee ID	Each person in the IP area is identifiable by an ID card/ attendant pass/ visitor pass/ other
Nursing station	Patient file are secured
Staff knowledge (Security Guard)	All Keys are available with guard and are in working condition.
Corridors	No food trays in corridors

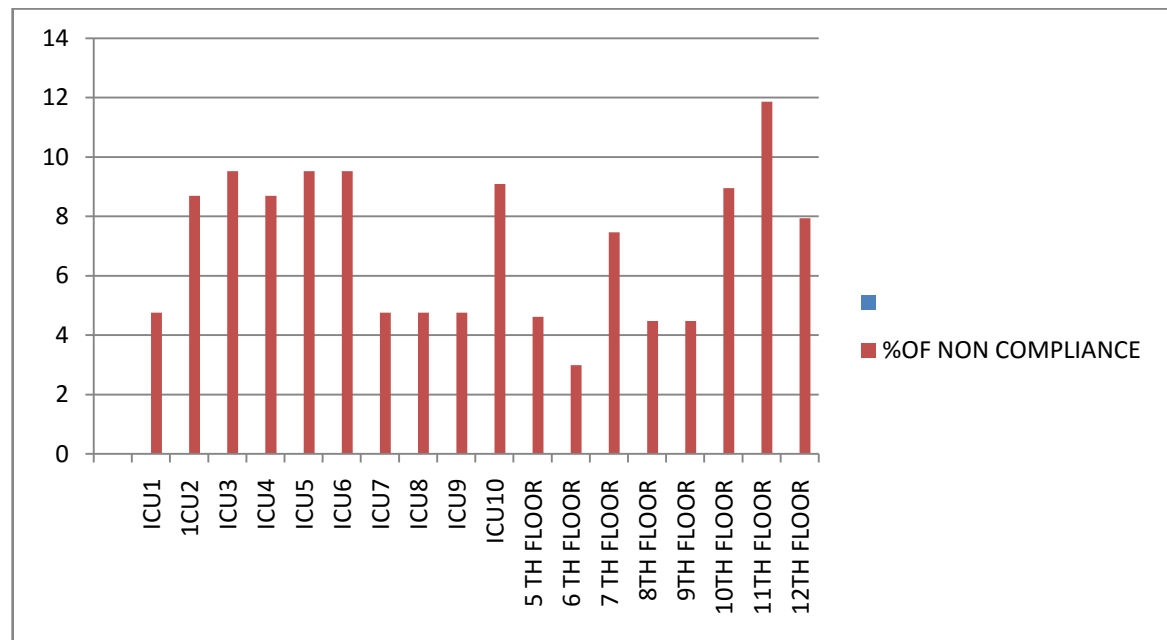
- The observations during FMS Audit in April 2016 reflected that the medication drawers were not locked in 99% of the patient's bed side. When the nursing staff

was questioned for the same it was observed that they were unaware regarding the importance of locking the bedside medication drawers and the non-compliance associated with the same.

- This comes as non-compliance under Medication Management and Patient Safety. The major hazard with this non-compliance is of Self Medication by the patient. This also violates the JCI policy of Safe Drug Storage.

IV. ENGINEERING:

Area-wise percentage of non-compliance in engineering:



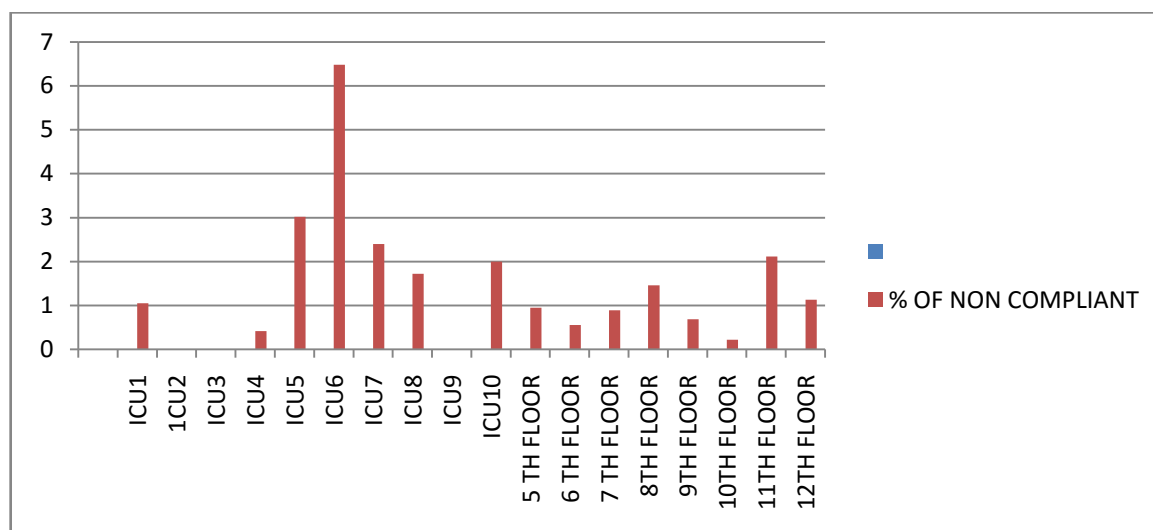
The ENGINEERING facility was assessed under the following categories:

- Wall
- Floor
- Doors
- Electrical Connection
- Stairs
- Room safety
- Corridors
- Medication Rooms
- Dirty Utility

Rubber mats were not placed near any of the electrical boards in the IPD/ ICUs/ OPDs showing 100% non-compliance

V. BIOMEDICAL EQUIPMENT:

Area-wise percentage of non-compliance in biomedical equipment:



The BIOMEDICAL EQUIPMENT was assessed under the following parameters:

S. NO.	PARAMETERS
1	Equipment has a preventive maintenance (PM) sticker which is up to date and contains all the 4 items
2	A complaint has been raised for non functional equipment (if applicable) and a complaint # is available
3	Equipment is clean and stain free
4	Equipment is not damaged/ worn & torn/ rusted
5	Bed Wheels are functional (check any 2)
6	Bed locks are functional (check any 2)
7	Bed side rails are functional (check any 2)
8	Every bed has a PM sticker which is up to date (check any 2)
9	Every wheel chair has a PM sticker which is upto date (check any 2)
10	Direction of flow of gases is marked in the gas panel/AVSU

11	Gases in the pipes are identified by name in AVSU
12	Direction of opening and closure of gas valves is marked in AVSU
13	Staff are aware as to where the gas panel key is located
Room safety	Call bell is provided at the bed side and is working properly
	Call bell is provided in the washroom and is working properly
	Call bells have hanging cords in washrooms
Nursing station	Point of care testing equipment quality check is done daily

After comlining and analysing the data, these were the MAJOR NON COMPLIANT AREAS:

- Patient Medication Drawers: Not locked
- Management of major HAZMAT spill
- Staff knowledge regarding fire
- Electrical distribution boards: not locked

RECOMMENDATIONS:

1. Patient medication drawers not locked:

- Understanding the importance of this non-compliance, circulate an email to all the concerned floor managers and the nursing TL. In the email the audit findings will be shared with them.
- They would also be educated and reinforced regarding the importance of locking the patient bedside medication drawers and the hazards of not locking the same.
- Re- auditing to be scheduled 2 days post the email.

2. How to manage HAZMAT major spill:

- Mock drills should be conducted and live management of hazmat major spill should be done.
- The posters educating the staff on how to manage HAZMAT major spill should be pasted on all the nursing units.
- Scheduling of audit in form of a questionnaire exam should be made mandatory for all employees, 15 days post the interventions.

3. Staff knowledge regarding fire:

- A training session in fire safety needs to be scheduled where the staff would be retrained. Such trainings should be carried out at regular intervals.

4. Electrical Distribution Boards were not locked:

- A daily check to ensure that the electrical distribution boards are locked should be carried for initial one week, followed by a regular weekly check keeping the engineering department and the on duty security guards in loop.

II. Studying the Resource efficiency of the Mobile Echo process

INTRODUCTION:

An echocardiogram (also called an echo) is a type of ultrasound test that uses high-pitched sound waves that are sent through a device called the transducer. The device picks up echoes of the sound waves as they bounce off the different parts of the heart. These echoes are turned into the moving pictures of the heart that can be seen on a video screen.

The different types of echocardiograms are:

- Transthoracic echocardiogram
- Stress echocardiogram
- Doppler echocardiogram
- Transesophageal echocardiogram

Mobile echo process involves conducting the echocardiography bedside. The mobile echocardiography machine at MEDANTA, THE MEDICITY conducts the following tests: Transthoracic echocardiography, Doppler echocardiography (USG Carotid Doppler and Peripheral Doppler)

AIM: To study the resource efficiency of the Mobile Echo process.

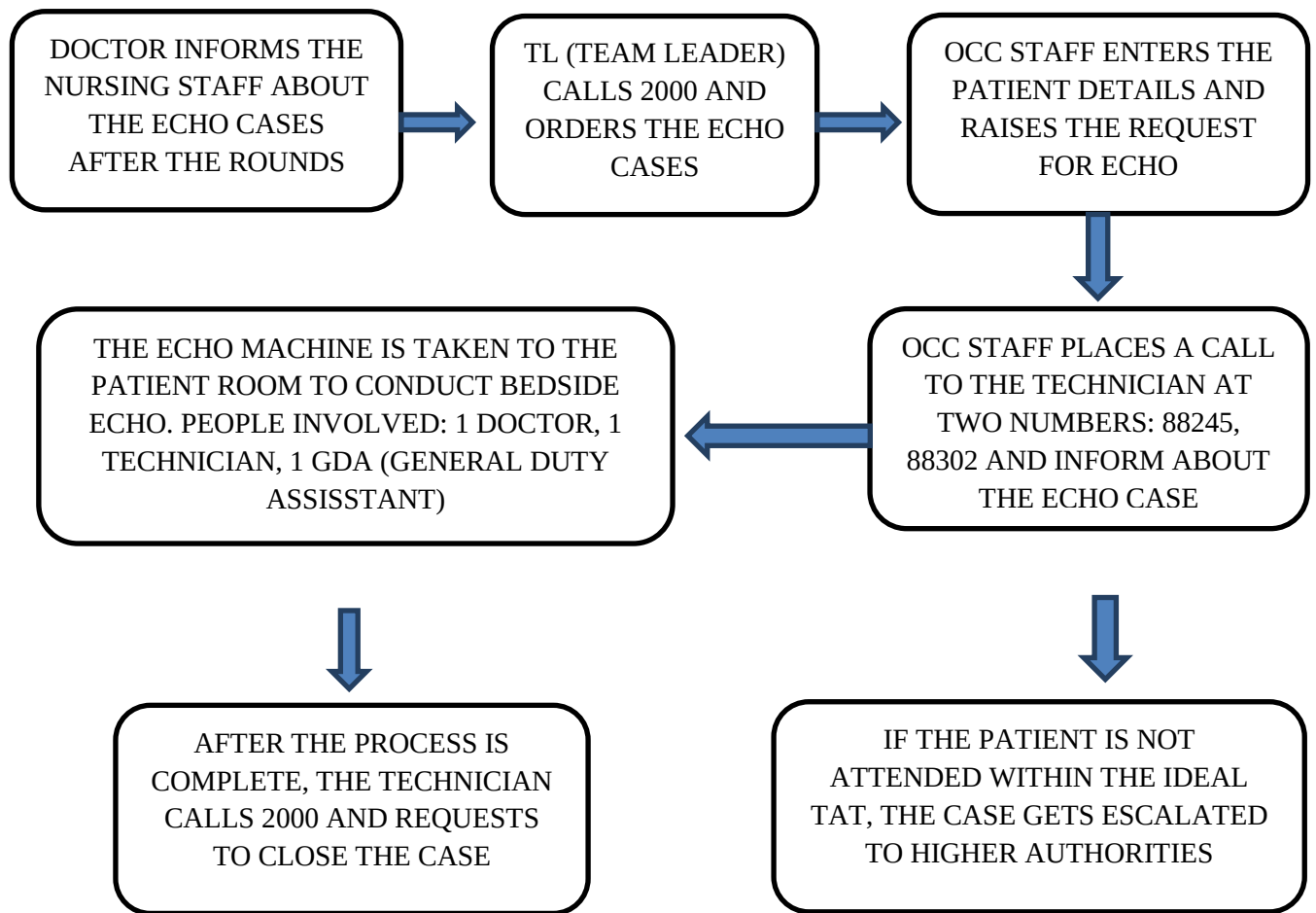
METHODOLOGY:

- *Study Type:* Retrospective study
- *Study Area:*
 - Floors covered by Mobile Echo Machine 1- ICU (1-10), Heart Command Center, Observation and Daycare

- Floors covered by Mobile Echo Machine 2- Floors 5-15
 - Operations Control Center(OCC)
 - *Study Duration:*One Month
 - *Data Collection:*Secondary data collection from Dreamsol- Over2Cloud.
- Observations made by visiting the patients along with the Mobile Echo Machine.

PROCESS FLOW:

The process followed during the tests conducted by the mobile echo machine is as follows:



ESCALATIONS:

If the patient is not attended with the specified time, the case gets escalated to the senior management. As soon as the time exceeds the limit, a text message is sent to the next concerned person to look into the case.

ESCALATION LEVEL	NAME	TIME
FIRST LEVEL	MANAGER-Mrs.ManviJuyal	0 minutes
SECOND LEVEL	SENIOR MANAGER-Mrs.ArchanaMirgan	30 minutes
THIRD LEVEL	HOD- Dr R RKasliwal	1 hour
FOURTH LEVEL	COO- Mr.PankajSahni	2 hour

FINDINGS:

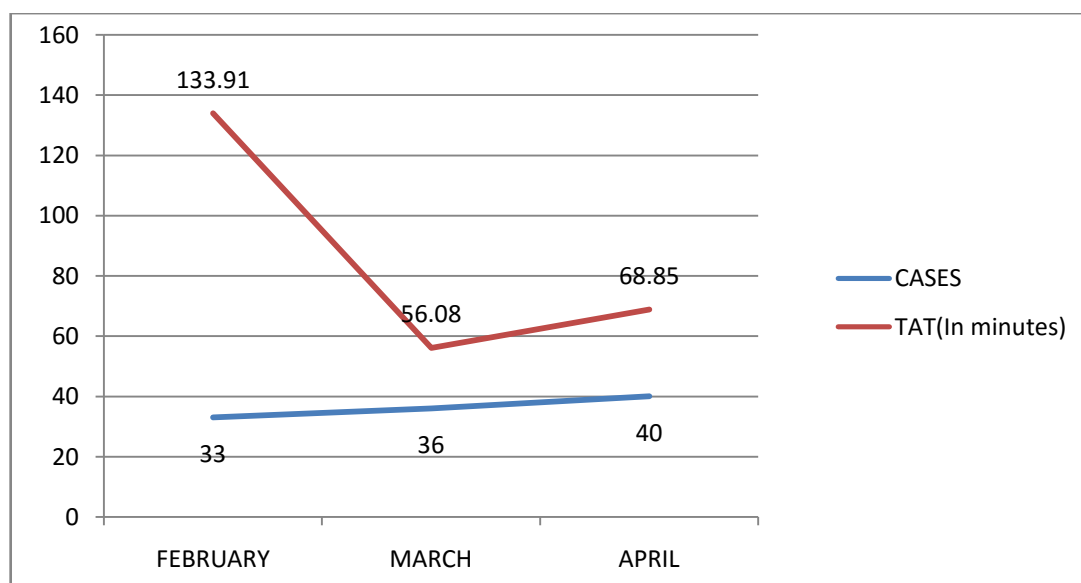
The data from the Over2Cloud Software was analysed. The findings are as follows:

📊 TURNAROUND TIME (TAT)

I) STAT CASES FOR ECHO:

The TAT for STAT cases in February was 134 minutes (2 hours 14 minutes) which was almost double the IDEAL TAT (1 hour). It reduced in March and April to approximately 1 hour, complying with the ideal TAT. Analysis also showed an increase in the number of stat cases per month.

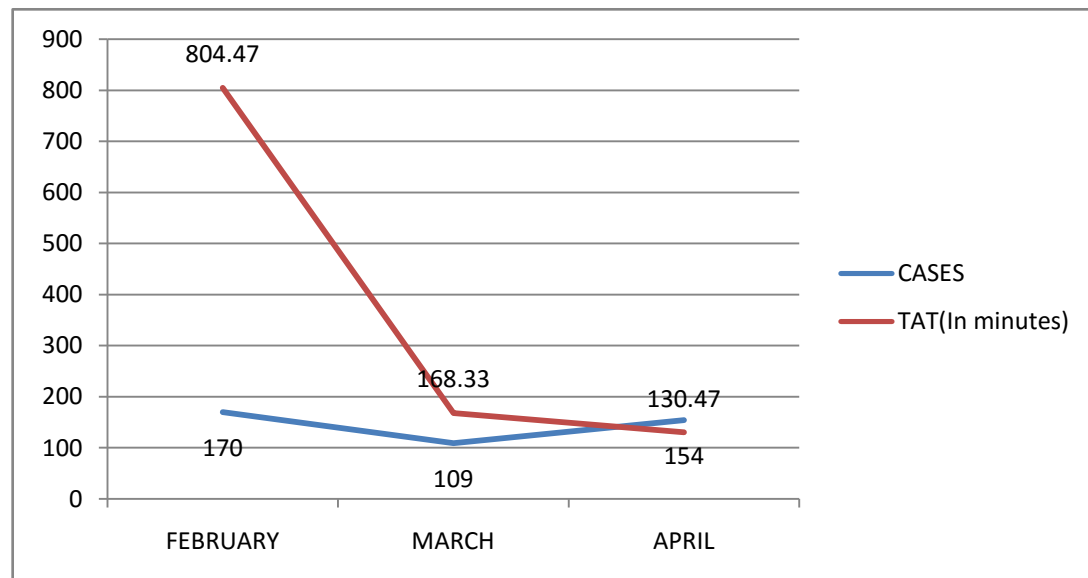
STAT CASES FOR ECHO		
MONTH	CASES	TAT(In minutes)
FEBRUARY	33	133.91
MARCH	36	56.08
APRIL	40	68.85



II) URGENT CASES FOR ECHO:

The TAT for urgent cases in February was 804 minutes (13 hours 24 minutes) which was much ahead of the IDEAL TAT (3 hour). It reduced in March to 168 minutes (2 hours 48 minutes) and further reduced to 130 minutes (2 hours 10 minutes) in April, complying with the ideal TAT.

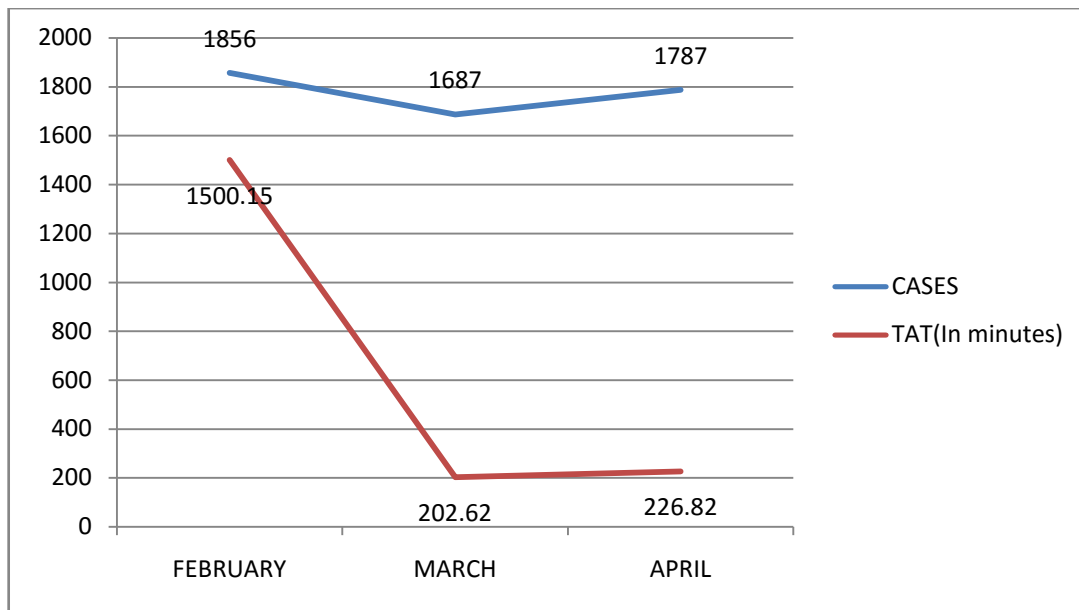
URGENT CASES FOR ECHO		
MONTH	CASES	TAT(In minutes)
FEBRUARY	170	804.47
MARCH	109	168.33
APRIL	154	130.47



III) ROUTINE CASES FOR ECHO:

The TAT for routine cases in February was 1500 minutes (25 hours) which was much ahead of the IDEAL TAT (8 hours). It reduced in March to 202 minutes (3 hours 22 minutes) and to 227 minutes (3 hours 47 minutes) in April, complying with the ideal TAT.

ROUTINE CASES FOR ECHO		
MONTH	CASES	TAT(In minutes)
FEBRUARY	1856	1500.15
MARCH	1687	202.62
APRIL	1787	226.82



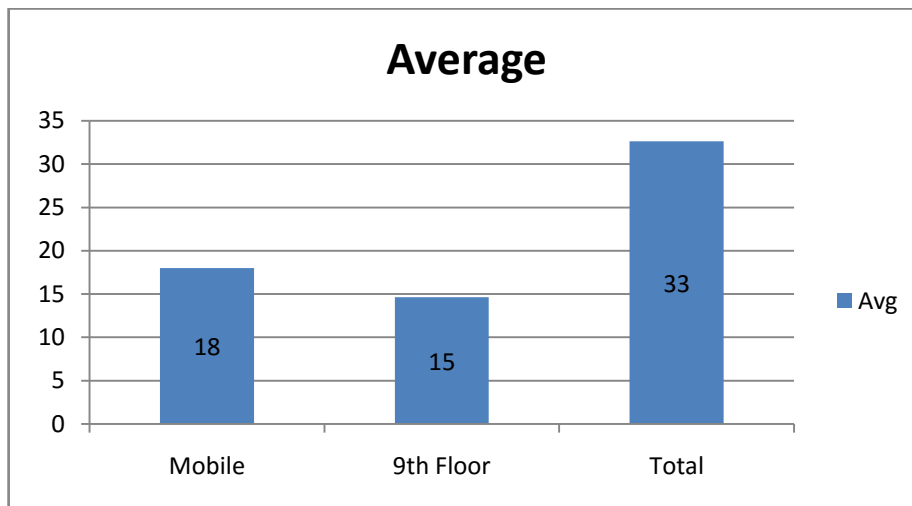
TREND IN AVERAGE CASES PER FLOOR:

The average cases per floor have increased since the inception of the mobile echo service. It was observed that majority (65%-75%) of the echocardiogram orders come from the 8th floor as well as the ICU. Data source: Manual Excel sheet. (Observations by the technician)

1. FEBRUARY 2016: The average cases per floor for Machine1 were 18 while for Machine 2 were 15 for the month of February 2016

Floor	Mobile	9th Floor	Total
5		7	7
6		4	4
7		6	6
8	13	41	54
9	11	28	39
10		6	6
11	6		6
12	9	1	10

15	2		2
ICU	103	24	127
Total	144	117	261
Avg	18	15	33

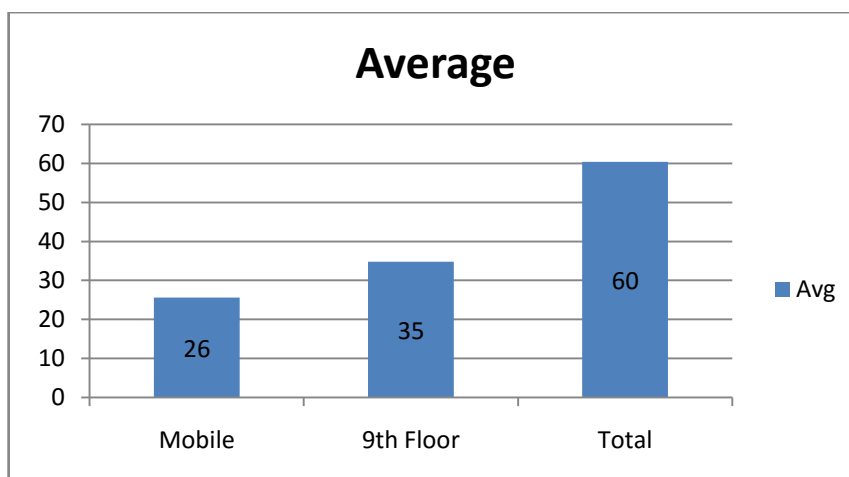


2. MARCH 2016

While, for the month of March, Machine 1 catered to 26 cases per floor and Machine 2 catered to 35 cases per floor.

Floor	Mobile	9th Floor	Total
5		24	24
6		45	45
7		33	33
8	6	446	452
9		295	295
10		34	34
11	20	7	27
12	20	4	24
15			0

ICU	620	17	637
Total	666	905	1571
Avg	26	35	60

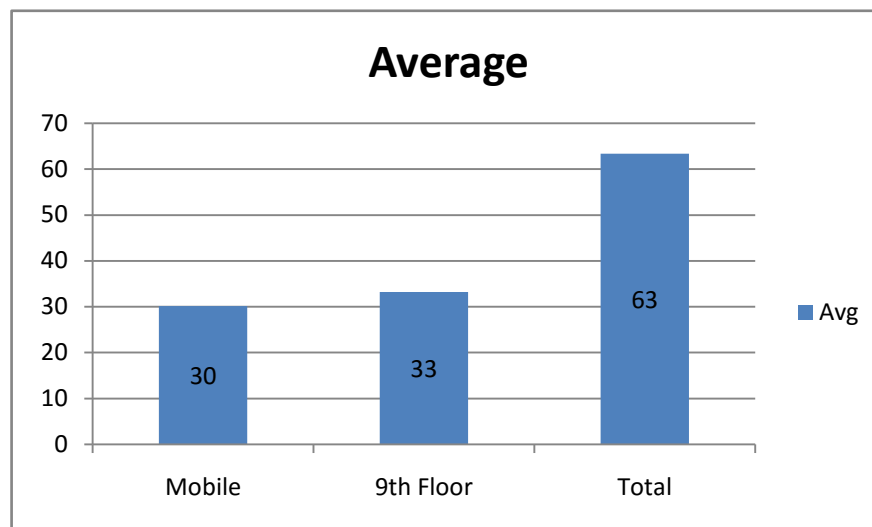


3. APRIL 2016

In April 2016, Machine 1 attended to 30 patients per floor on an average, while machine 2 attended 33 patients per floor on an average.

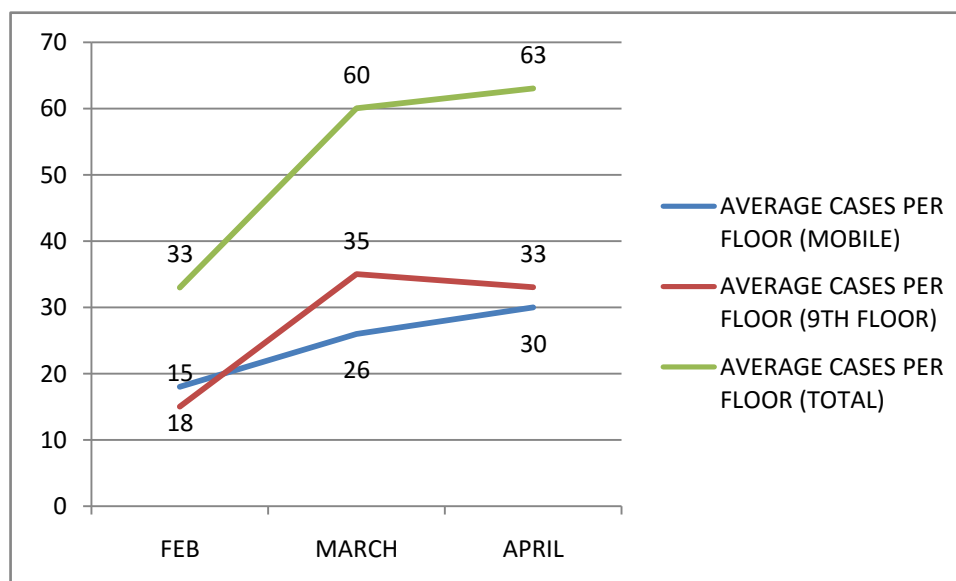
Floor	Mobile	9th Floor	Total
5	6	49	55
6	2	30	32
7	4	28	32
8	75	329	404
9	8	214	222
10	3	33	36
11	27	4	31
12	42	2	44
15	8	4	12
ICU	488	38	526
Total	663	731	1394

Average	30	33	63
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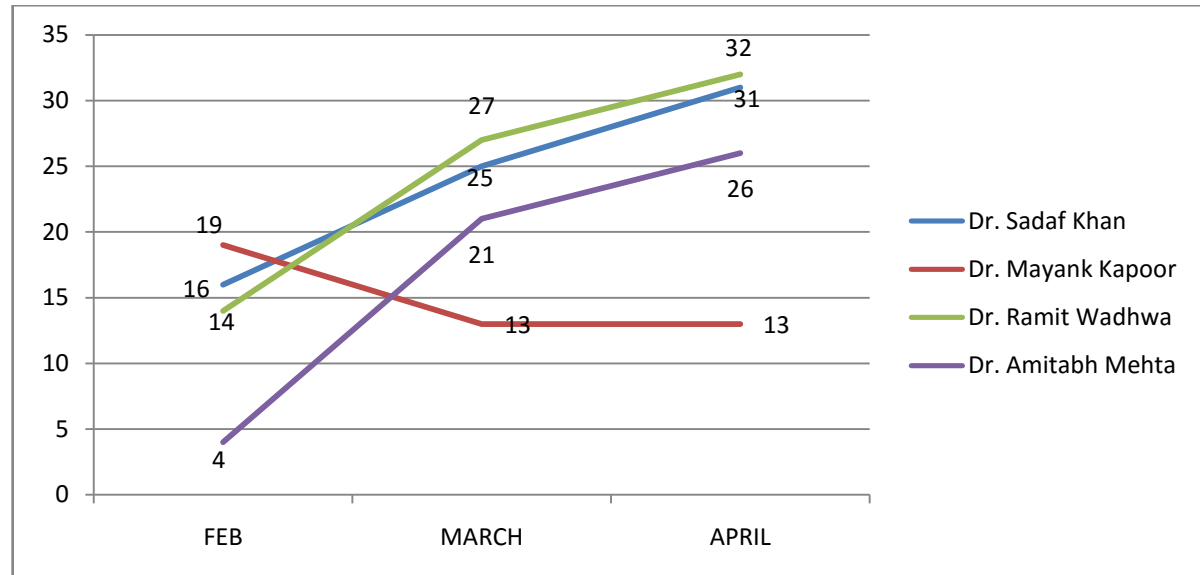
The trend in the average cases per floor by Mobile Echo Machine 1 and Mobile Echo Machine 2 shows a constant increase in the number of cases since February till April 2016. The analysis of average cases per machine has been shown below:

	AVERAGE CASES PER FLOOR		
	(MOBILE)	(9TH FLOOR)	(TOTAL)
FEB	18	15	33
MARCH	26	35	60
APRIL	30	33	63



TREND IN DOCTORS CASES:

Also it was observed that the doctor's cases per doctor have increased monthly since February. Taking the example of four doctors, the results have been shown below:



CHALLENGES:

- **TRANSPORTATION TIME:** Taking the machine to the patient via the elevator is time consuming as well as can lead to lift clogging.
- **PATIENT AVAILABILITY:** The patient sometimes is unavailable for the echo test to be done in their room.
- **CANCELLED CASES:** No information about the cancelled cases in the system leads to a lot of time wastage.
- The technician call number needs to be available 24*7. Presently no orders are taken post 5:30 pm and the technician phones are switched off.
- There is no consolidated list of bedside echocardiography from each floor.
Reason: Echo orders are made at different times due to different timings of doctor's rounds.
- Bright light in the patient's room makes it difficult for the personnel to view the screen of the machine during the echo process.

BENEFITS:

- **Patient convenience:** Mobile echo machines save the patient from the transfer hassle. Patients do not have to wait outside the labs for their turn.

- The turnaround time, TAT, per patient (For the Routine, Stat, and Urgent cases) has been reduced.
- An end to end tracking system has been created which keeps a record of all the echo orders, from the informed time till the closed time.
- Monitoring of the escalations has been made easy, which helps in catering to the patients in minimum time possible.
- Convenience for the nurses- Now they do not have to accompany the patients to the procedure room.
- Patient priority for echo tests (routine, urgent, stat) is easily visible through the centralised system through which Stat cases (with the highest priority) can be attended first.
- Patient confidentiality is maintained. They feel at ease in their in rooms.

CONCLUSION:

The Mobile Echo service though in the initial stages, has proved to be resource efficient as it managed to reduce the Turnaround Time for Echo, and has led to an increase in the number of Echo cases. It fulfils its aim to provide maximum comfort and convenience to the patient.

RECOMMENDATIONS:

- To ensure patient availability in the room, they should be informed prior about the time at which the test should be conducted. Sufficient time should be given to the patient and nurse to get ready for the test.
- The TL (team leader) at each floor should ensure the reporting of cancelled cases by calling 2000 to the Operations Control Centre.
- Switching off the room lights, pulling the curtains, or providing some kind of shield for the screen can keep keeps light off screen and make it easily visible for the doctors.
- To ensure zero pendency of echo cases, Echo machines if operational from 8:00am-8:30pm can cater to the echo requests received till 7pm. Post 7pm the urgent and stat orders can be catered by night doctor on call and the Routine cases can be catered by 10am next day (15 hours TAT)
- Checking and comparing the pending cases with both machines by the technicians can ensure proper closures.

- A consolidated list of all the Echo orders from the same floor can make it convenient for the team to conduct the tests at a stretch and in turn save time.

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