

**Summer Training at
Alchemist Hospital, Panchkula (Haryana)
(April 1–May 31, 2014)**

- **A Study on the Value Stream Mapping of Radiology Department (including X-ray, CT scan and Ultrasound)**
- **Case Study on NABH: Gap Analysis of Access, Assessment and Continuity of Care (AAC).**

**By
Urvi Singh**

**Under the guidance of
Dr. Sushmit Jain**

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



**The IIHMR University, Jaipur
2014**

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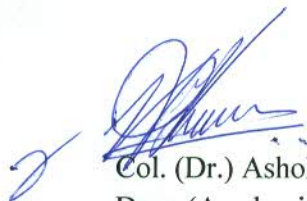
CERTIFICATE

This is to certify that **Dr. Urvi Singh** has undergone her summer training in **Alchemist Hospital, Panchkula (Haryana)** from 1st April 2014 to 31st May 2014. The candidate herself carried out all the studies related to her summer training. Her topics of study were :

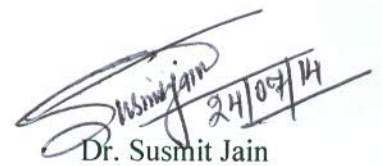
1. Study on Value Stream Mapping of Radiology Department (Including X-Ray, Ultrasound and CT Scan).
2. NABH (Gap analysis on Access, Assessment and Continuity of Care (AAC)).

Her approach to the study has been scientific and analytical. This summer training is in the partial fulfilment of the course requirement recommended for the award of Post Graduate Diploma in Hospital and Health Management.

I wish her success in all her future endeavours.



Col. (Dr.) Ashok Kaushik
Dean (Academic & Student Affairs)
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Dr. Susmit Jain
Assistant Professor
IIHMR Jaipur

Ref: AHL/HR/TRG/015

4th June, 2014

TO WHOM IT MAY CONCERN

This is to certify that **Dr. Urvi Singh**, Management Trainee from IIHMR, Jaipur has completed her Summer Training from 1st April, 2014 to 31st May, 2014 at Alchemist Hospital, Panchkula; Haryana.

She has successfully submitted the following projects to the Hospital which were assigned to her during this period:

1. *Value stream mapping of Radiology Department (including X-Ray, CT Scan and Ultrasound)*
2. *Project on NABH (Gap analysis on access assessment and continuity of care AAC)*

She was found to be sincere and hardworking during her tenure. We wish her all the best for her future endeavors.

For ALCHEMIST HOSPITALS LTD.



Harleen Kaur
Head - HR & Admin

Acknowledgement

I, Dr.Urvi Singh, PGDHM student of IIHMR Jaipur, is extremely grateful to the Alchemist Hospital for the confidence bestowed in me and entrusting my projects entitled **–Value Stream Mapping of Radiology department including X-ray, Ultrasound and CT scan” and “Case Study on NABH: Gap Analysis of Access Assessment and Continuity of Care (AAC)”**.

At this juncture, we feel deeply honored in expressing our sincere thanks to Dr.Inderjeet Singh Viridi (MD), Ms.Harleen Kaur (HOD HR) for giving us opportunity to pursue summer internship in Alchemist Hospital. Our special thanks to Dr. Abhishek Garg(DMS) , Dr.Neetu Mehra (Sr. Executive Operations)and Dr.Anjali Kaul (HOD,Radiology Department)for making the resources available at right time and providing valuable insights leading to successful completion of our project

My thanks and sincere appreciation also goes to the Radiology staff for giving us essential information and helped in completion of this project.

I express my gratitude to Dr.Ashok Kaushik (Dean, Academic affairs), IIHMR Jaipur for arranging the summer training in good schedule. I also extend my gratitude to my mentor Dr. Neetu Purohit and who assisted in compiling the project.

Lastly, my thanks and appreciation goes to my family and friends for their continuous encouragement and unwavering support.

DECLARATION BY CANDIDATE

I, Dr.Urvi Singh , hereby declare that the research projects **_A study on value stream mapping of radiology department (including X-ray, CT Scan and Ultrasound _and _Case study on NABH:Gap analysis of Access, Assessment and Continuity of Care(AAC)‘** undertaken by me at Alchemist Hospital is an original research work and will be used for research and academic purposes only.

Dr. Urvi Singh

31ST May 2014

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ABBREVIATIONS

IPD: Inpatient department

OPD: Outpatient department

GDA: General duty assistant

HIS: Hospital Information System

Mins: Minutes

No: Number

TAT: Turn around time

MLC: Medico legal cases

OT: Operation theatre

ICU: Intensive care unit

Lab: Laboratory

HR: Human Resource

HIS: Hospital Information System

AERB: Atomic Energy Regulatory Board

Hospital Profile

The Alchemist group was launched in 1981 by Dr. K.D Singh. Its business interests falls under the following categories: food processing, hotels and resorts, restaurants, road technologies, healthcare, education, pharmaceuticals, steel mesh, aviation, real estate and tea.

The Alchemist group has two tertiary care hospitals, in Panchkula and Gurgaon, with its flagship hospital located in Panchkula.

Alchemist hospital, Panchkula, is a private limited organization, set up in 2008.

Mission

To provide best healthcare services by highly qualified and trained personals so that the patient gets cared and cured.

Vision

Alchemist group aspires to be the most preferred healthcare organization for customers and employees by:

- (1) Offering affordable and, transparent and world class services.
- (2) Developing synergetic relationship between management and employees.

The Hospital is set up in 1.25 acres area, with coverage of 80,000 square feet. The building has two blocks; one is hospital block and the other service block. Each block has 5 floors, with a basement.

The hospital building has two lifts; one for patients and the other for attendants and staff. There are two parking areas, one for the attendants, patients and staff and the other for emergency cases with a separate entry from OPD area.

Alchemist hospital is a 100 bedded hospital, with 21 specialties. The top 5 specialties are: cardiology, cardiac surgery, neurology, neurosurgery, and joint replacement.

Basement of the hospital has the following departments: Administration, HR, Marketing, Billing, Finance, CSSD, laboratory, blood bank and food & beverages. Pharmacy, Laundry and Medical gases department is located in the basement of the Service Block.

Reception and registration, Outpatient clinics, Lifestyle clinics, Help desk, In-Patient Admission desk, Emergency department, Imaging services (X-rays, USG, CT scan), Cardiac (echo, TMT, Holter), Dietary services and Cafeteria are on the ground floor.

The hospital is supported by 5 operation theatres, with 2 general OTs, 1 cardiac, 1 Neuro and 1 for joint replacement, all located on the first floor. It also has SICU, Cath lab, CCU, Labour room, Nursery and NICU.

HDU, MICU, dialysis and endoscopy are located on the second floor.

General wards are on the second floor, twin sharing, private and deluxe rooms are on the second, third and fourth floor. Suites are located on the fourth floor.

Medical record department and store is on the fifth floor.

Distribution of beds

Department	Distribution of beds
First floor	
Triage	10
CTVS-ICU	6
CCU	8
NICU	7
ICU-1	9
ICU-2	7
JRSU	6
SICU	4
Second floor	
Economy room	9
Twin-sharing	2
Private room	3

Third floor	
Twin-sharing	6
Private room	6
Deluxe	2
Fourth floor	
Twin-sharing	6
Private	6
Deluxe	1
Suite	2

Emergency department- a section of an institution that is staffed and equipped to provide rapid and varied emergency care, especially for those who are stricken with sudden and acute illness or who are the victims of severe trauma.

The emergency department of the hospital is 6 bedded and located on the ground floor with separate entrance and guided assistance for parking. The diagnostic facilities e.g. CT scan, MRI are located close to the department. Portable X-ray machine is also available.

Timely emergency care is continuously available 24 hours/day, seven days a week.

There are 3 ambulances outfitted with advanced life support available round the clock, accompanied with a specialized nurse. A doctor accompanies the ambulances if the medical condition of the patient demands.

The department uses a triage system of screening and classifying clients to determine priority needs for the most efficient use of available personnel and equipments.

. The department is equipped with a defibrillator, cardiac monitors, gas pipes, ambu bags, vital drugs and other resuscitation equipments. There is an isolation room and a plaster room in the emergency department.

The most common emergency encountered is cardiac cases. There are 30-40 medico-legal cases per month and 4-5 brought dead in a month.

Blood bank- A place, or organization, or unit, or institution for carrying out all or any of the operations for collection, Aphaeresis, storage, procuring and distribution of blood drawn from donors and for preparation storage and distribution of blood components.

The blood bank of Alchemist hospital is located on the basement of the hospital.

The blood bank adheres to norms under drugs and cosmetics act 1940 and rules 1945 as amended from time to time.

It uses latest GEL technology, for blood grouping, cross matching and antibody screening.

It also conducts mandatory tests for hepatitis B, C, Malaria, VDRL and HIV.

Platelet Aphaeresis also being done with the help of com.tec blood separator for dengue and patients requiring platelets.

The blood bank uses latest technology in refrigerators for safe storage of blood at proper temperature.

Medical records department- it maintains and analyzes patients' medical records.

Medical records of patients start building the day he is admitted in the hospital. It consists of his case sheets, physical condition, investigation, operation/procedure details, daily progress and discharge information. All these papers are deposited in this section after the discharge/death of the patient and are arranged according to the MR number.

Medical records of in-patient and out-patient are maintained separately. These are confidential documents and its handing over to the patients or doctors should be against the signature of the person/officer concerned.

The department has the following persons:

- (1) Medical records officer
- (2) Senior records technician
- (3) Junior records technician

Medico-legal cases are maintained separately and the medical records officer is responsible for providing assistance to police officers in the form of requirement of injury report, MLC investigation report.

The medical records are retained for 5 years but in case of MLC, retention period is 10 years.

Pharmacy- Alchemist hospital has its own pharmacy i.e. Alchemist pharmacy

The OPD pharmacy is located on the ground floor and the IP and central pharmacy in the basement. The services are 24x7 available.

The OPD pharmacy is utilized to obtain prescribed and over-the-counter medications.

Central pharmacy accepts requests for medications from, emergency, OT, ICU through indents being put up by doctors.

IP pharmacy accepts requests for medications, through indents, being put up by IPD patients.

Narcotic drugs are stored separately, issued on special request from doctors.

CSSD (central sterile supply department)

- ❖ One of the most sophisticated, technically advanced world class department in the area.
- ❖ Receives, stores, sterilizes and distributes supplies to all departments including the wards, outpatient department and other special units such as operating theatre (OT) , Cath lab and ICU.
- ❖ LOCATION- it is located in the basement of alchemist hospital building and connected to OT by dumb waiter.
- ❖ PLANNING – it is in accordance with the principal of zoning having four zones:
 - ✚ ZONE 1 – **Dirty area** where receiving counter is there and decontamination and disinfection is done. ZONE 2 – **clean area** for assembling and packing. supplies are received through double door washer placed in zone 1 .
 - ✚ ZONE 3 – **sterilising area** with two double door autoclaves opening into issuing zone.
 - ✚ ZONE 4 – **Issuing** .storage and distribution is done here. A double door issuing counter is present.
- ❖ VALIDATION of sterilisation is done regularly by use of physical , chemical and biological markers .

- ✚ Physical validation – temperature, humidity and other sterilisation cycle details are attached with every cycle run.
- ✚ Chemical – chemical dye tapes and indicators are present in every pack to be sterilised and as label on packs. BOWIE – DICK test is done daily.
- ✚ Biological – microbiological organism cultures are kept and tested in lab for any growth every week.

LAB SERVICES:

- ❖ Lab is designed to handle large volumes of samples efficiently and effectively
- ❖ Deliver high quality rapid services with standard turnaround times for each service provided.
- ❖ Equipped with latest technology and techniques.
- ❖ Sample collection room is located in OPD area and Laboratory is located in basement.
- ❖ Stringent quality controls and processes backed by contemporary IT network and efficient logistics management ensures highest level of accuracy of tests conducted.
- ❖ Lab is first to have:
 - ✚ Fully auto analyser dry bio chemistry.
 - ✚ Five part with retic-haematology auto analyser.
 - ✚ Equipped with cytopsin for all body fulides malignancy diagnosis.

OPERATION THEATRES

Alchemist Hospital has five operation theatres that are equipped with anaesthesia machines of international standards, cold operating lights, advanced air filtering system, central gases and suction, image intensifier, electrosurgical units and endoscopic equipments.

The theatres are staffed by an experienced team of anaesthesiologists, technicians and nurses and follow strict protocols for infection control.

These ensure high standards of patient safety during and after surgery by following pre-operative and operative checklists.

They have 5 modular OTs – one OT dedicated for cardiac, one OT specially assigned for orthopedic surgeries, one OT for neurosurgeries and other non infected cases, two OTs are assigned as multispecialty operation theatres for all other specialties.

IMAGING/ RADIOLOGY

Radiology describes the area of medicine that utilizes X-ray ultrasonic waves and magnetic resonance properties of cell in order to detect, diagnose and guide treatment of numerous diseases and injuries. Currently, the dynamic images that radiology provides are essential to both physicians and patients. The realistic depiction of the anatomy, functions and abnormalities within the body, radiologists can interpret imaging studies, act as consultants to other specialists, and perform interventional procedures.

- ✚ **General radiography:** X-rays are a form of radiation like light or radio waves that can be focused into a beam. Once carefully aimed at the part of the body being examined, an X-ray machine produces a small burst of radiation that passes through the body, recording an image on photographic film or a special image recording plate.
- ✚ **Mobile radiography:** Mobile unit to X-ray bed ridden patients and sometimes used to X-ray during operative procedures in the operating room.
- ✚ **C-arm:** C-arms are radiology and fluoroscopic systems in which the image receptor and X-ray tube housing assembly is positioned by the c-shaped support that give the equipment its name. Mainly used during operative procedures and assisting special procedures in department.
- ✚ **Ultrasound scanner:** Ultrasound or sonography uses high frequency sound waves to see inside the body. As the sound waves pass through the body, echoes can help doctors determine the location of a structure or abnormality, as well as information about its makeup. Ultrasound is sensitive way to examine internal organs.
- ✚ **Digital Subtraction Angiography (DSA) Scan:** This is a super specialized type of imaging technology with wide usage in both diagnostic and interventional radiology and finds its usage here in neuro surgical scan.
- ✚ **Computerized tomography:** This is a specialized form of tomography which gives a cut section at any level

I. A study on Value Stream Mapping of Radiology Department including (X-ray, CT Scan and Ultrasound)

1. Introduction

Value stream mapping is a lean management method used to analyze and design the flow of materials and information required to bring the product or service to a customer or patient. Value stream mapping provides a high level of a process that has been targeted for improvement.

- Depending on the process being mapped, it may include the entire service line from patient presentation to discharge or from order of investigation to completion of investigation.
- The value stream illustrates both the physical flow of a patient or product through the organization and the information flow related to the patient or product. While process improvement efforts focus on the details of a specific process (for example individual steps associated with X-ray, CT scan or Ultrasound), the value stream focus is on entire process from beginning to end. The ability to focus on both of these areas is essential to the transformation of the value delivery process.
- Value stream mapping includes value added services and non value added services. Value added services are those services that bring value to a procedure and service where as non value added services are those services that do not bring any value to the procedure or services (for example waiting time for investigation)
- Thus, value stream mapping helps in identification of these services through current state map and helps in transforming the current state map into future state map through elimination or reduction of non value services thus improving the efficiency of a particular procedure or service.

2. Review of Literature

The Lean concept, initially called The Toyota Production System, was introduced around 1950 because of low efficiency at The Toyota Motor Company. The Production system was developed after visiting the Ford Company in Detroit, and thus partly inspired by Western Taylorism and assembly line production at the Ford Company. (1,2).

- It implied a change in working culture. First, it was employee-driven with continuous improvements, called “kaizen”. Second, it focused on keeping up the flow in all steps of the production and minimizing all kind of waste in each step. Third, it focused on what was of value to the customers and eliminated procedures that did not give value to the customer. The Toyota Production system was optimized in the following decades and in the 1990s introduced into western industries as the Lean Concept.(3)
- Odense University Hospital (OUH) is one of the largest hospitals in Denmark, covering 10% of the Danish healthcare system. On a yearly basis, the number of in-patients is 105,000 and the number of out-patient visits is 900,000. The Department of Radiology has a budget of 18-million Euros, 200 employees and 40radiography/medical students. Two-hundred-thousand examinations/treatments were carried out in 2009, and all kinds of radiology procedures are performed.
- There was a dialogue between the manager of the large industrial company and the manager of OUH, where they discussed Lean and efficiency. The result was collaboration and coaching between the private enterprise and the hospital in implementing Lean at the hospital. The reason for OUH to start working with Lean was partly due to an increasing demand for more examinations and treatments at the hospital without increasing costs.
- VSM (value stream mapping) A member of the Lean group, together with a member from the CT team, follow a patient through the current system from arrival from the referring physician until the report is sent back. They measure the time taken for every step in the workflow and the waiting time between the steps. Each step is analyzed and they map out what creates value for the patient. They identify problems in the workflow, make an effort to solve the problems, and make a new presentation of the future flow. Overall, the run-through time for the patients with the longest waiting times were 3 months from start to finish, of which only 133 min were of value to the patient—a shocking result for everybody in the

section. Having worked through this problem, the result of the group's great efforts decreased the total run-through time for these patients to 4 weeks.(4)

- A chain of pilot projects have been deployed to test the effects of lean at a community medical center in Missoula, Montana. Early results show a reduction of turnaround time for pathology reports from the anatomical pathology lab from five to two days and a reduction of medication order to treatment initiation from 4 hours to 12 minutes (5) .Also, in Pittsburgh, Pennsylvania, a group of hospitals have implemented lean concepts and methodologies to minimize the risk of developing central catheter-related bloodstream infections.

3. Rationale

Today all over the world, Healthcare institutions success is determined by quality, cost and efficiency of care delivery. Hospitals around the world are concentrating efforts and developing new systems in order to improve patient flow through their premises. Healthcare delivery institutions are facing an increase in patient population; therefore, it is very important to develop flexible, efficient and responsive systems to operate at an acceptable service level.

Radiology department is major diagnostic department and also many other departments are dependent on it. Out of which X-Ray, Ultrasound and CT scan receive maximum amount of patients both outpatients and inpatients. This department is one of the revenue generating centers of the hospital so to keep pace with patient flow and providing services without long waiting time, the need of value stream mapping was felt.

4. Objectives

The study was undertaken with the following objectives:

- To assess the current value stream map for imaging services including X-ray, CT scan and ultrasound.
- To identify reasons responsible for non value added services
- To provide recommendations to eliminate or reduce the non value added services related to above investigations.

5. Methodology

The methodology and tools adopted to achieve the study objectives was:

- **Study area:** Radiology department of Alchemist Hospital, Panchkula
- **Study design:** Descriptive study design
- **Study period:** 15 days (30th April-16th May) excluding Sundays.
- **Study timings:** 9.00am-5.30pm
- **Study tool:** Microsoft Excel
- **Sampling Technique:** Purposive sampling
- **Study population:** Outpatients
- **Sample size determination:** 20% of total month patients visiting radiology department.
- **Sample size:** Total patients: X-ray=1125
Ultrasound=900
CT scan=265
 - **Sample size:** 458
 - **X-ray:** 225
 - ✚ **Inclusion criteria:** All general X-ray patients, package patients
 - ✚ **Exclusion criteria:** X-ray KUB.
 - **Ultrasound:** 180
 - ✚ **Inclusion criteria:** All patients.
 - **CT Scan:** 53
 - ✚ **Inclusion criteria:** CT brain (plain), CT Abdomen (plain), CT Chest
 - ✚ **Exclusion criteria:** CT brain (contrast), CT Abdomen (contrast)
- **Data collection method:**
 - **Primary data** collected through direct observation method and data is collected for:
 1. Billing time for OPD patients
 2. Time taken to reach department
 3. Cycle time for registration
 4. Average waiting time before procedure
 5. Cycle time for the investigation
 6. Average waiting time for reporting
 7. Cycle time for reporting

8. Lead time for investigation
9. Total cycle time for investigation.

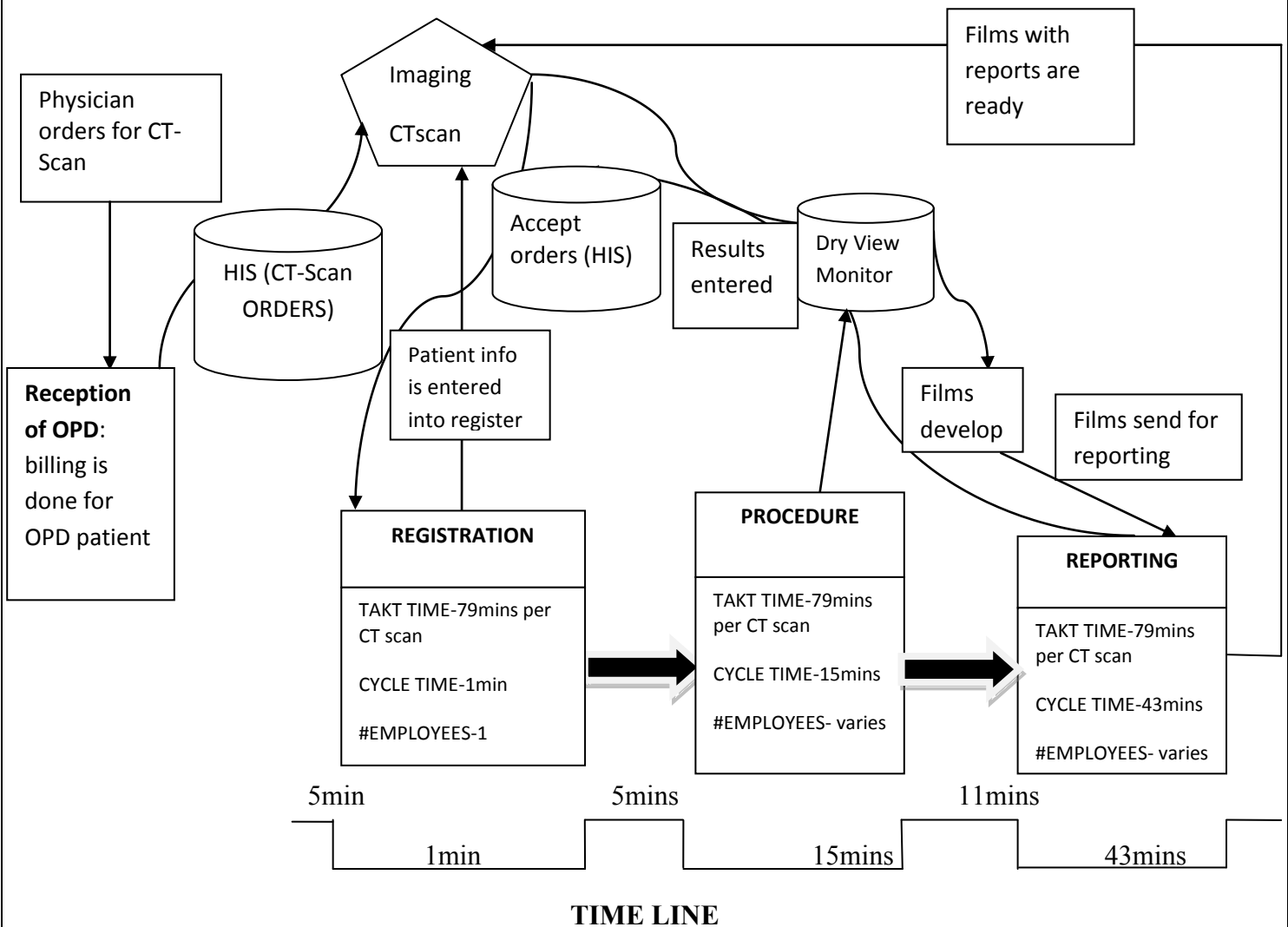
- **Cycle time:** Cycle time is defined as the amount of time necessary to complete one cycle of an operation or a process.
- **Lead time:** Lead time is a time taken to process one patient through the entire value stream from beginning to end.
- **Secondary data** is collected from radiology registers for calculation of average patient per day, sample size and takt time.
 - **Takt time:** Takt is a German word referring to baton used by orchestra conductor. Just as orchestra must keep pace with the conductor, the processes within the hospital must keep pace with patient demand. Dividing available time by average patient per day is formula for calculating takt time.
 - **TAT for X-ray** = 3 hours (180mins)
 - **TAT for CT scan** = 2 hours(120mins)
 - **TAT for Ultrasound** = 1 hour (66mins)

Regular interaction was done with patients, radiologists, radiographers, GDA to understand the entire process flow and identify the issues which are leading to waiting time.

6. Findings

6.1 CT Scan

(FIGURE 1.)CURRENT STATE MAP FOR CT-SCAN



NO. OF EMPLOYEES

- **No. of employees for registration(radiographer) = 1**
- **No. of employees for procedure(radiographer) =** Varies according to shift

8:00 a.m. - 16:30 p.m. = 1

10:30 a.m. – 19:00 p.m. = 1

- **No. of employees for reporting:** Varies

Radiologists: 9:00 a.m. – 17:30 p.m. = 2

12:00 p.m. – 19:00 p.m. = 1

Typist: 9:00 a.m. – 5:30 p.m. = 1

10:30 a.m. – 19:00 p.m. = 1

- **Takt time for CT scan** = Available time per day/no of procedures per day

$$= 11*60\text{mins}-30\text{mins}/8$$

$$= 630/8$$

$$=79 \text{ mins/per CT scan}$$

- **Cycle time for CT scan:** 59 mins/per CT scan

- Registration: 1 min
- Procedure: 15mins
- Reporting: 43mins

- **Lead time for CT scan** = 80mins/per CT scan.

As lead time is coming 80mins/per CT scan this is greater than 79mins per CT scan this means small amount of non value added services in form of waiting time is present.

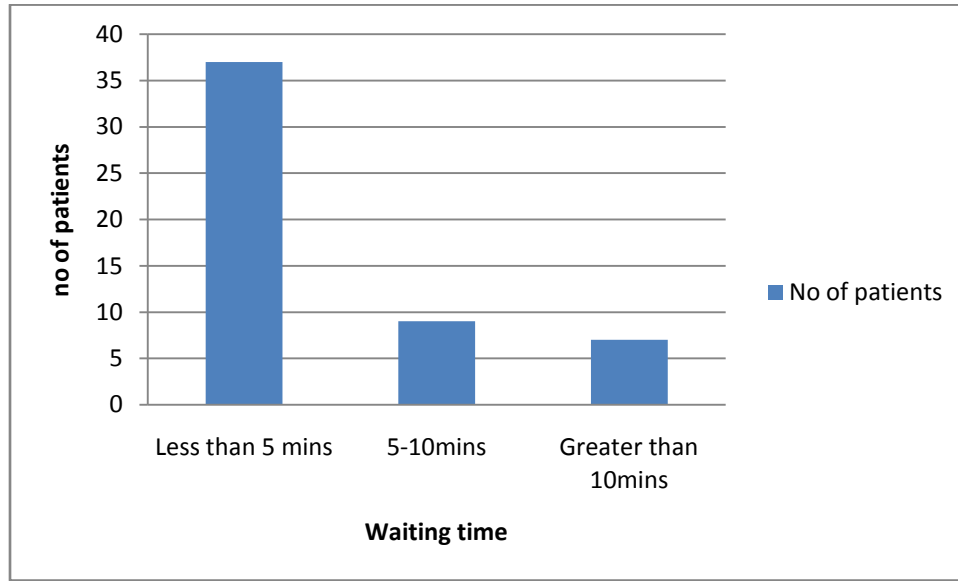
6.1.1 Waiting Time for CT scan

- **Average waiting time /delay for registration – 5 mins**

Table 1: Waiting time for registration of CT scan

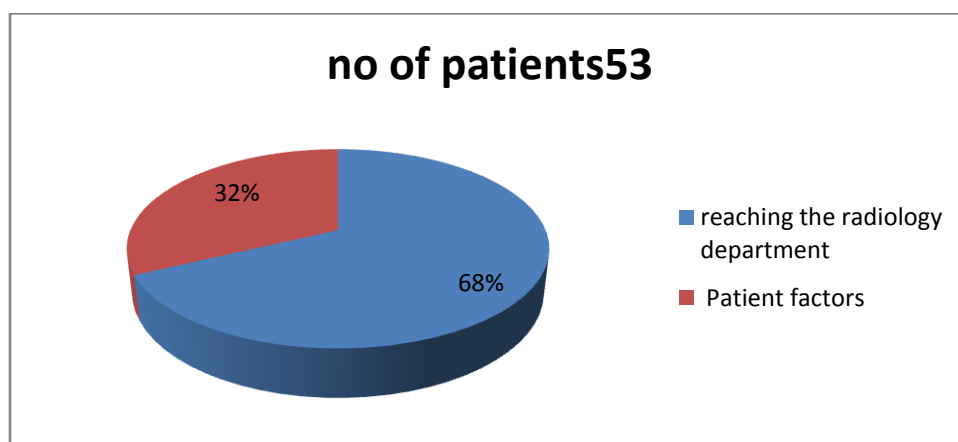
Waiting time	No of patients
Less than 5 mins	37
5-10mins	9
Greater than 10mins	7
Total	53

Graph 1: Waiting time for registration of CT scan



Interpretation: The graph shows that the waiting time is less than 5 mins for 37 patients, between 5 to 10 mins for 9 patients and greater than 10 mins for 7 patients.

Graph 2: Reasons for delay in registration of CT scan



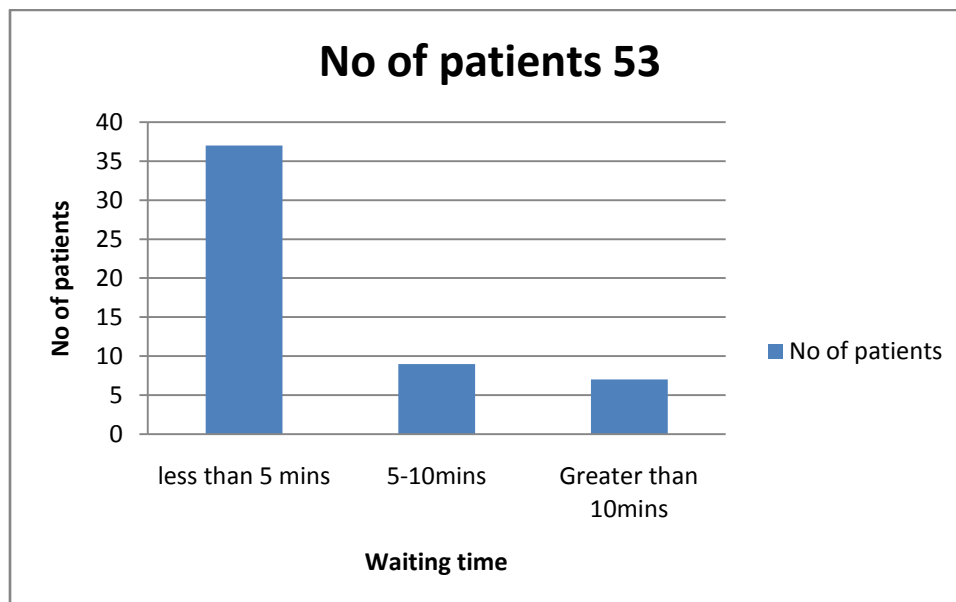
Interpretation: The above pie chart shows that about 68% patients take time to reach the radiology department as the reception is far from the department and about 32% patients are delayed for registration because some of them are package patients so they go for other tests after billing and some patients goes to cafeteria.

- **Average waiting time for procedure of CT Scan: 4mins**

Table 2: Waiting time for procedure of CT scan

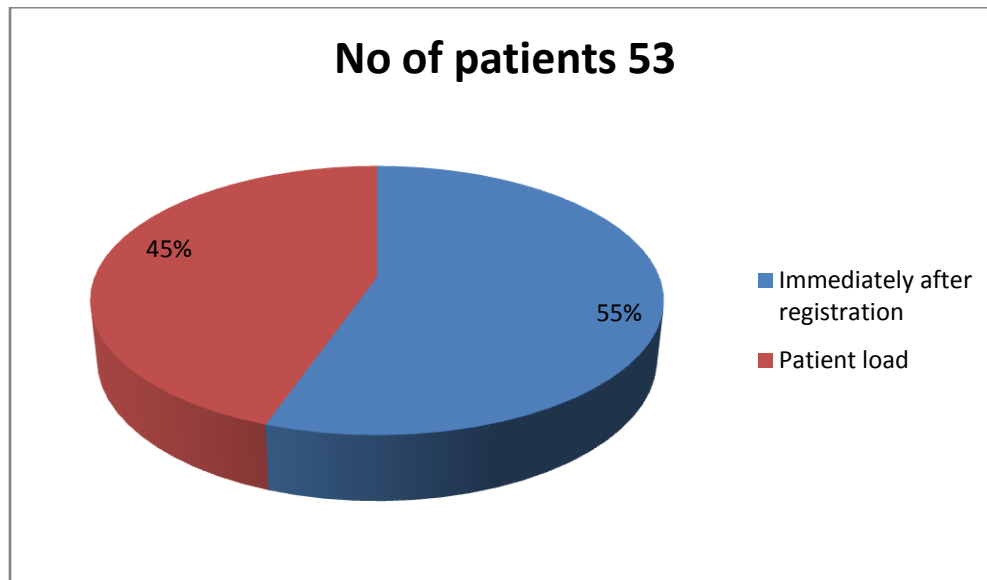
Waiting time	No of patients
less than 5 mins	37
5-10mins	9
Greater than 10mins	7
Total	53

Graph 3: Waiting time for procedure of CT Scan



Interpretation: The graph shows that waiting time is less than 5 minutes for 35 patients, between 5-10 mins for 5 patients and greater than 10 mins for 13 patients.

Graph 4: Reasons for delay in procedure of CT scan



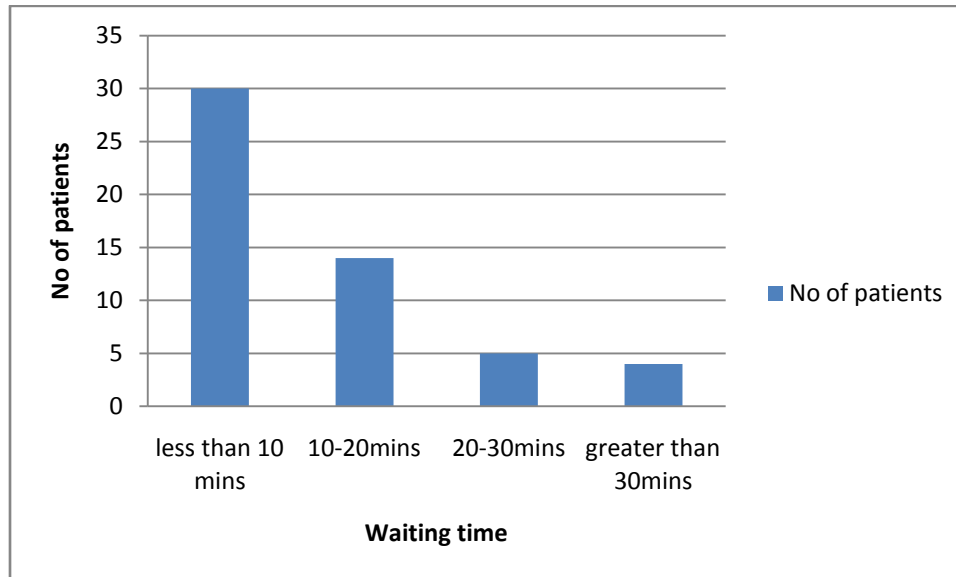
Interpretation: Above pie chart shows that for about half of the patients there is no delay for procedure, there is delay in procedure for 45% patients due to other patient load.

- **Average waiting time for reporting:** 11 minutes

Table 3: Waiting time for reporting of CT scan

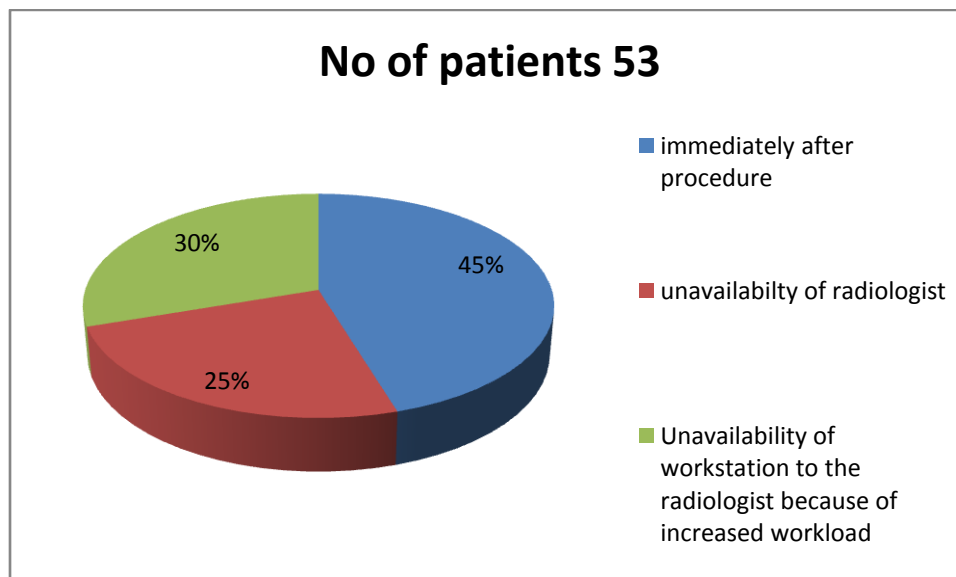
Waiting time	No of patients
Less than 10 mins	30
10 – 20 mins	14
20 – 30 mins	5
Greater than 30 mins	4
Total	53

Graph 5: Waiting time for reporting of CT scan



Interpretation: Above graph shows that waiting time is found out to be less than 10 mins for 30 patients, between 10 to 20 mins for 14 patients, between 20 to 30 mins for 5 patients and greater than 30 for 4 patients.

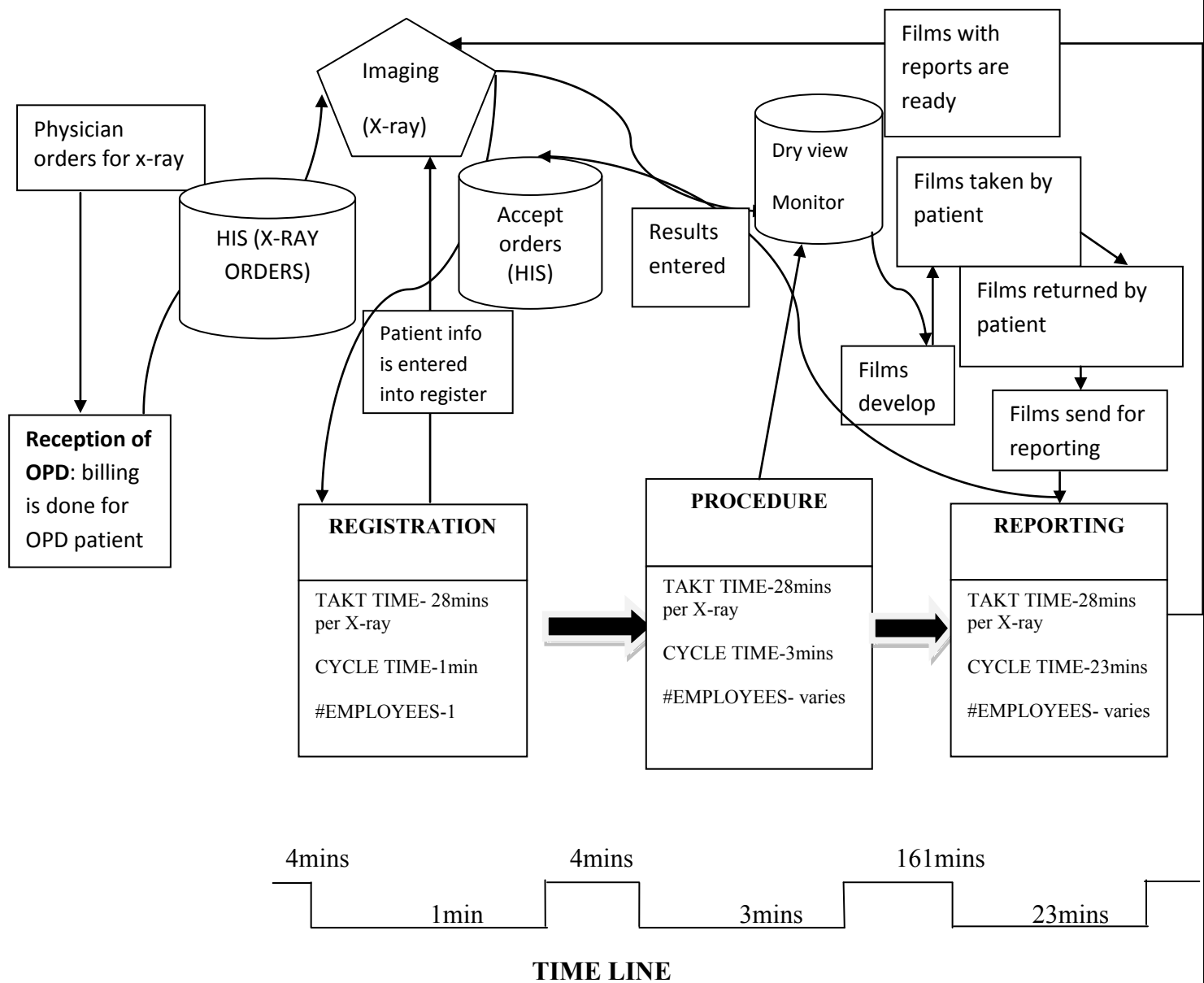
Graph 6: Reasons for delay in reporting of CT Scan



Interpretation:..Above pie chart shows that reporting for about 45% patients are done immediately after the procedure is completed. There is delay in reporting only for 30% patients due to CT scan patient load which leads to unavailability of the workstation to the radiologist to see the scanned images for reporting to be done and in 25% of cases there was unavailability of radiologist for reporting

6.2 X-Ray

(FIGURE 2) CURRENT STATE MAP FOR X-RAY



NO OF EMPLOYEES

- **No. of employees for registration(radiographer) = 1**
- **No. of employees for procedure(radiographer) = Varies according to shift**
 - 8:00 a.m.- 14:00 p.m. = 1
 - 14:00 p.m. – 20:00 p.m. = 1
 - 20:00 p.m. - 8.00 a.m. = 1
 - 9:00 a.m. – 17:30 p.m. = 1
 - 8.00 a.m. - 4.30 p.m. = 1
- **No. of employees for reporting: Varies**
 - **Radiologists:** 9:00 a.m. -17:30 p.m. = 2
12:00 p.m. – 19:00 p.m. = 1
 - **Typist:** 9:00 a.m. – 5:30pm = 1
10:30am - 19:00pm = 1
- **Takt time for X-RAY = Available time per day/no of procedures per day**
$$= (24*60-60)/50$$
$$= 1380/50$$
$$= 28 \text{ mins Per X-ray}$$
- **Cycle time for X-RAY: 27mins per X-ray**
 - Registration: 1 min
 - Procedure: 3 mins
 - Reporting: 23 mins
- **Lead time for X-RAY = 196 mins per X-ray**

As lead time is coming 196mins per X-ray which is coming more than takt time which is 28mins per X-ray this means there is presence of non value added services in form of waiting time.

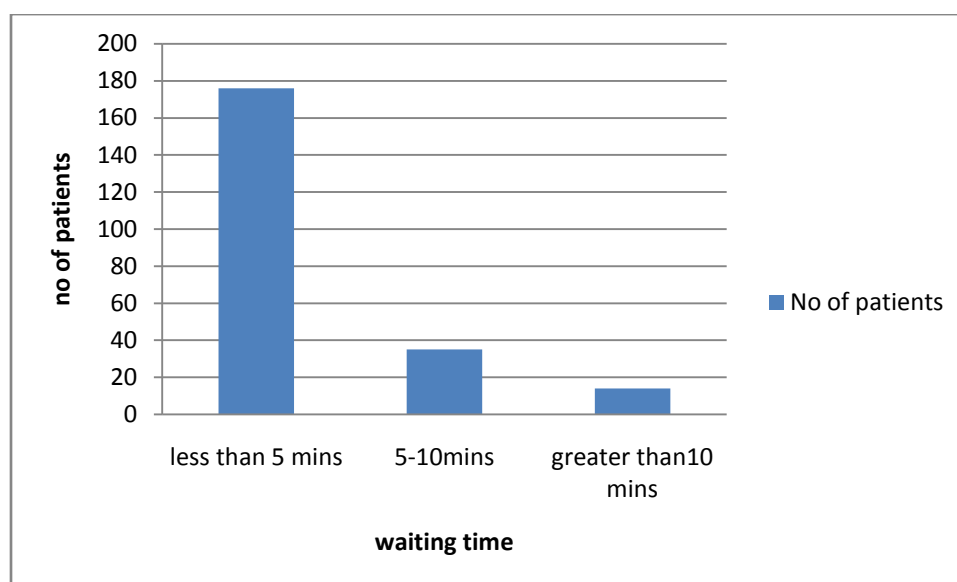
6.2.1 Waiting Time for X-ray

- Average waiting time for registration of X-ray - 4mins

Table 4: Waiting time for registration of X-ray

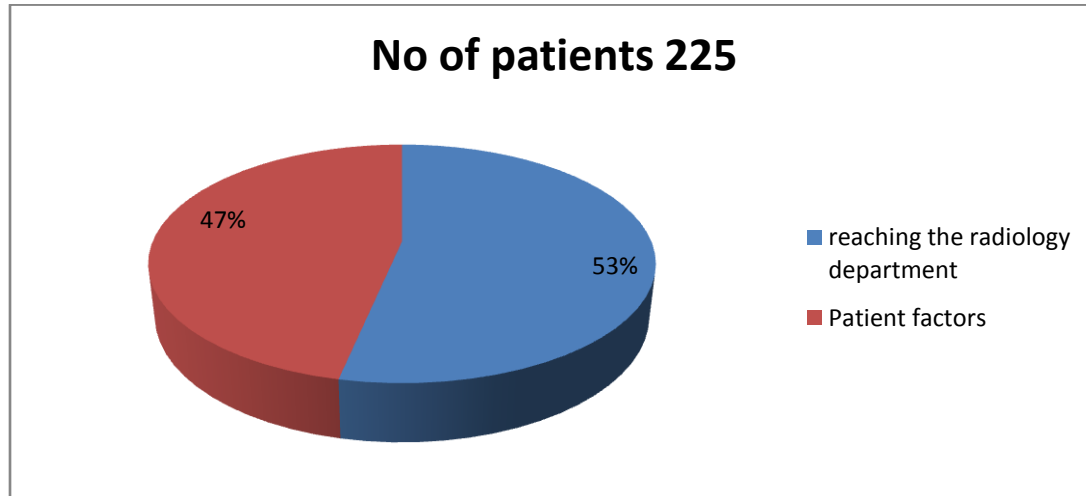
Waiting time	No of patients
Less than 5 mins	176
5-10 mins	35
Greater than 10 mins	14
Total	225

Graph 7: Waiting time for registration of X-ray



Interpretation: The above graph shows that waiting time for registration is less than 5mins for 176 patients, between 5 to 10 mins for 35 patients and greater than 10 mins.

Graph 8: Reasons for delay in registration of X-ray



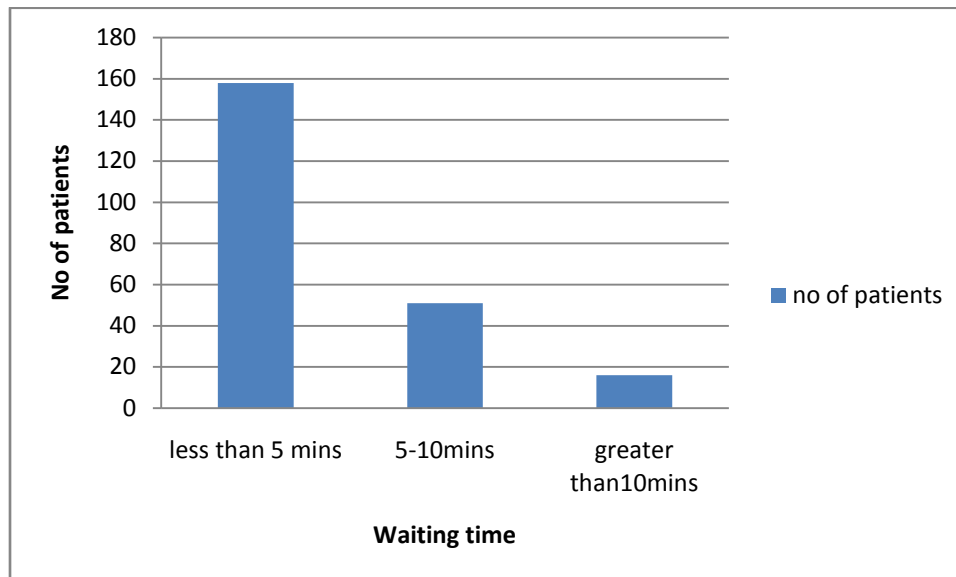
Interpretation: The above pie chart shows that about 53% patients take time to reach the radiology department as the reception is far from the department and about 47% patients are delayed for registration because some of them are package patients so they go for other tests after billing and some patients goes to cafeteria.

- **Average waiting time for procedure of X-ray: 4 mins**

Table 5: Waiting time for procedure of X-ray

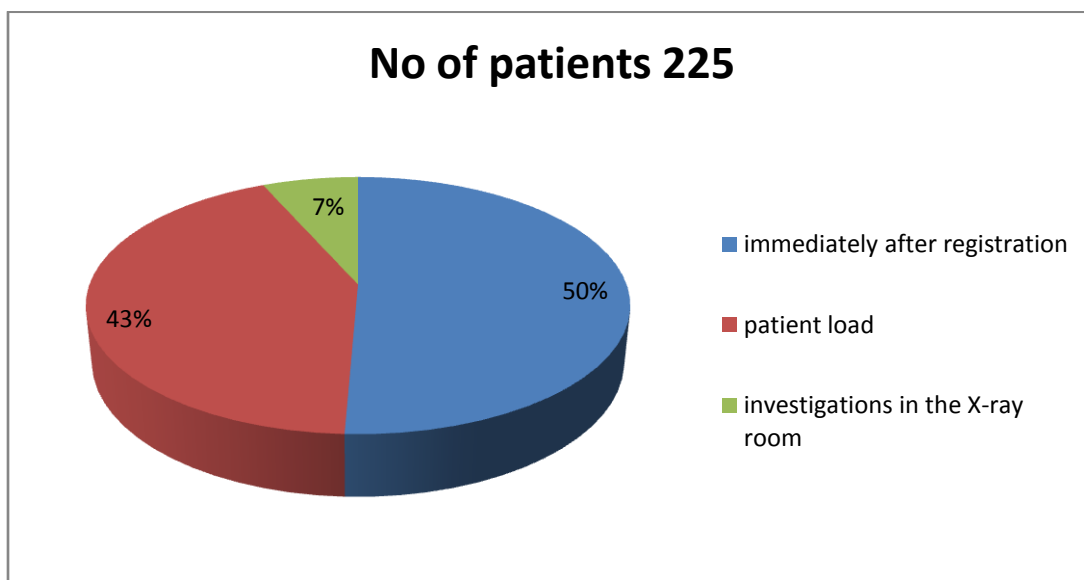
Waiting time	No. of patients
Less than 5 mins	158
5-10 mins	51
Greater than 10 mins	16
Total	225

Graph 9: Waiting time for procedure of X-ray



Interpretation: The above graph shows that waiting time is less than 5 mins for 158 patients, between 5 to 10 mins for 51 patients and greater than 10 mins for 16 patients.

Graph 10: Reasons for delay in procedure of X-ray



Interpretation: The above pie chart shows that for half of the patients there is no delay for the procedure (i.e. procedure is done on time), 43% of patients are delayed for the procedure due to

patient load and only 7% of patients are delayed for X-ray due to other investigations going in the X-ray room

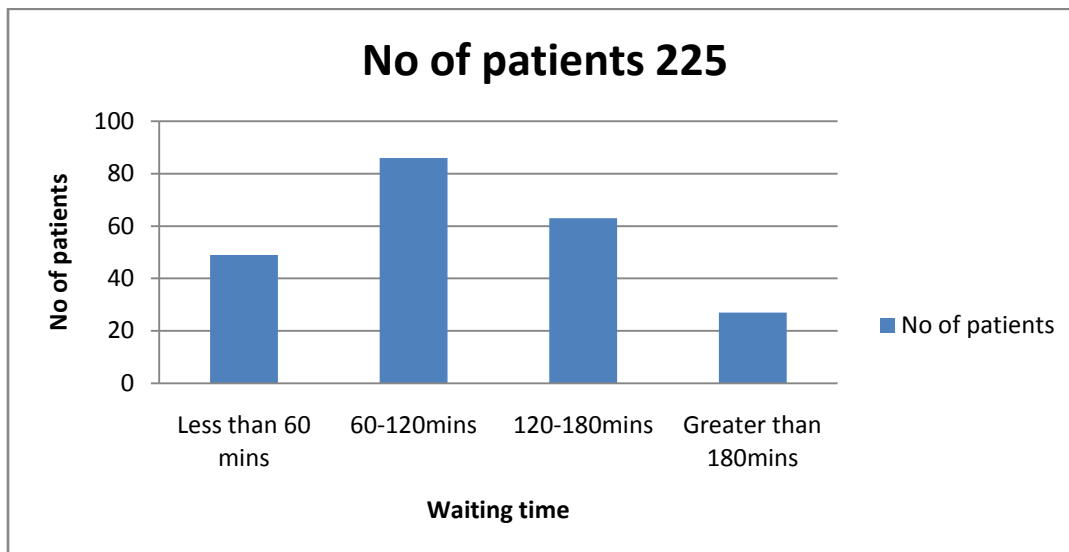
- **After returning the X-ray film by patient**

Average waiting time for reporting of X-ray: 161 mins

Table 6: Waiting time for reporting of X-ray

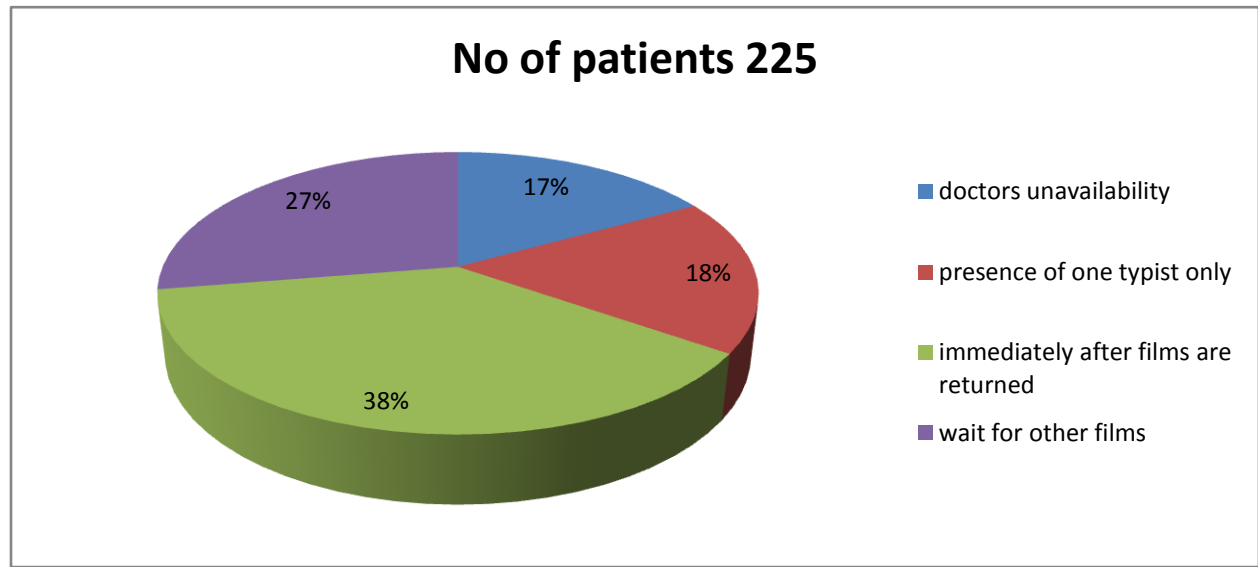
Waiting time	No of patients
Less than 60 mins	49
60-120mins	86
120-180mins	63
Greater than 180mins	27
Total	225

Graph 11: Waiting time for reporting of X-ray



Interpretation: The above graph shows that waiting time for reporting for 49 patients is less than 60 mins, between 60 to 120 mins for 86patients, between 120 to 180 mins for 63 patients and greater than 180 mins for 27 patients

Graph 12: Reasons for delay in reporting of X-ray

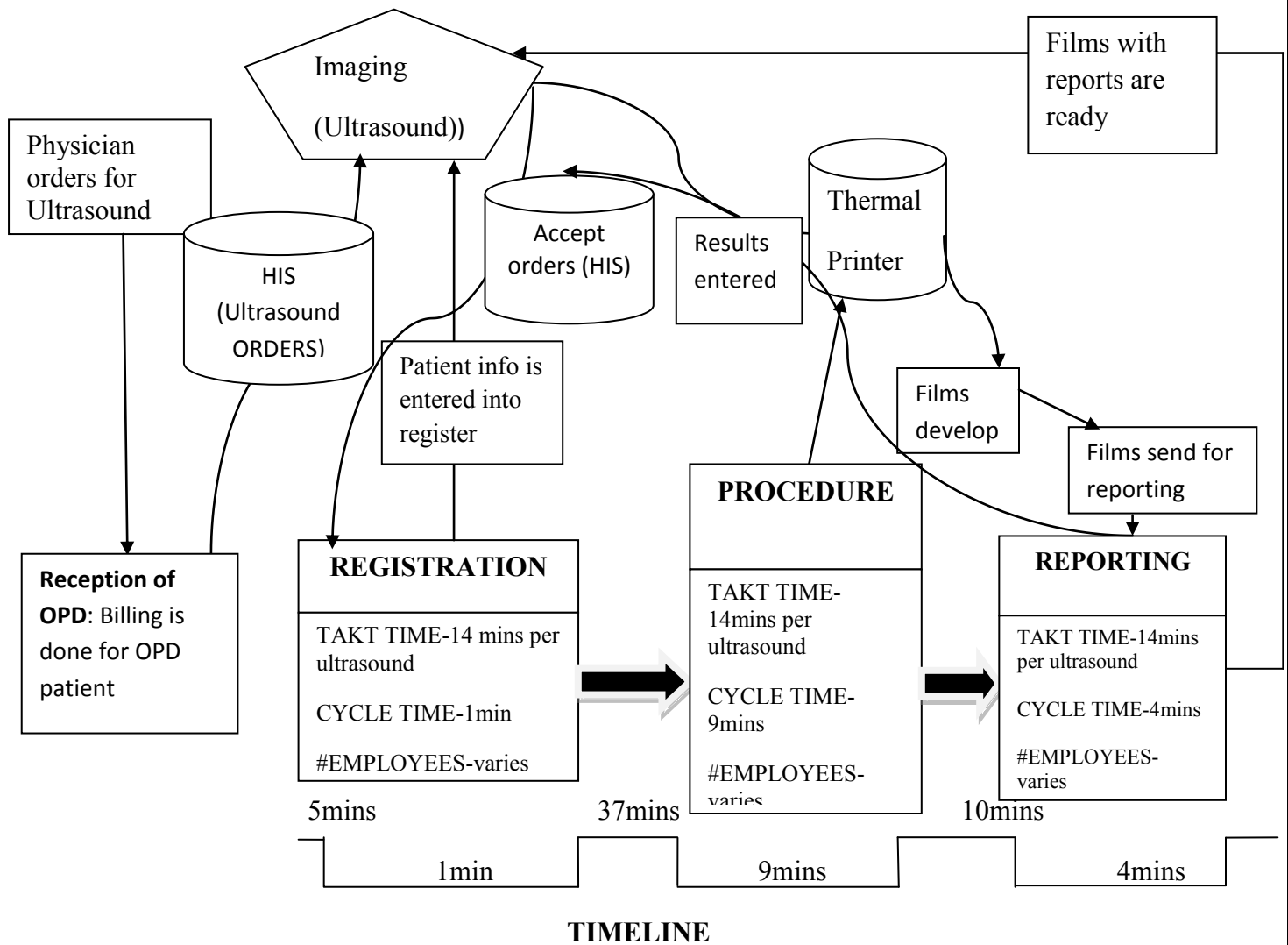


Interpretation:

The above pie chart shows that in 38% of cases reporting starts immediately after the films are returned. In 27% of cases radiographers keep on waiting for other films to come and then give for reporting. In 17% of cases there is unavailability of radiologist due to patient load for other imaging services where as in 18% of cases during our study on certain days there was presence of one typist only.

6.3 Ultrasound

(FIGURE 3.) CURRENT STATE MAP FOR ULTRASOUND



NO OF EMPLOYEES

- **No of employees for registration = 3** (done either by nurse or typist)
 - **1 Nurse** = 9.00am-17.30pm
 - **Typist** = 9.00am-17.30pm (1)
= 10.30am-19.00pm (1)
- **No of employees for procedure (radiologists) = varies**
 - **9:00 a.m. – 17:30 p.m. =**
 - **12:00 p.m. – 19:00 p.m. = 1**
 - **No. of employees for reporting = varies**
 - **Radiologists:** 9:00 a.m. – 17:30 p.m. = 2
12:00 p.m. -19:00 p.m. = 1
 - **Typist:** 9:00 a.m. – 5:30 p.m. = 1
10:30 a.m. – 19:00 p.m. = 1
- **Takt time for Ultrasound = Available time per day/no of ultrasound per day**
= $10 \times 60 \text{ mins} - 30 \text{ mins} / 40$
= $570 / 40$
= 14mins/per ultrasound
- **Cycle time for Ultrasound: 14 mins/per ultrasound**
 - **Registration:** 1 min
 - **Procedure:** 9 mins
 - **Reporting:** 4 mins

Lead time for Ultrasound: 66 mins/per ultrasound

As lead time for ultrasound is coming 66 mins/per Ultrasound which is greater than takt time this means that non value added services in form of waiting time is present.

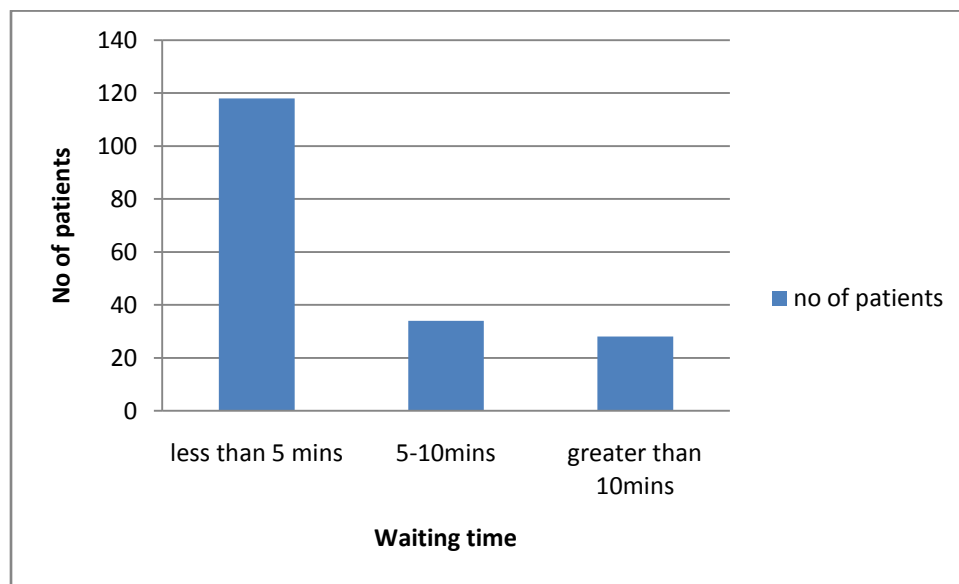
6.3.1Waiting Time for Ultrasound

- **Average waiting time /delay for registration of Ultrasound – 5 mins**

Table 7: Waiting time for registration of Ultrasound

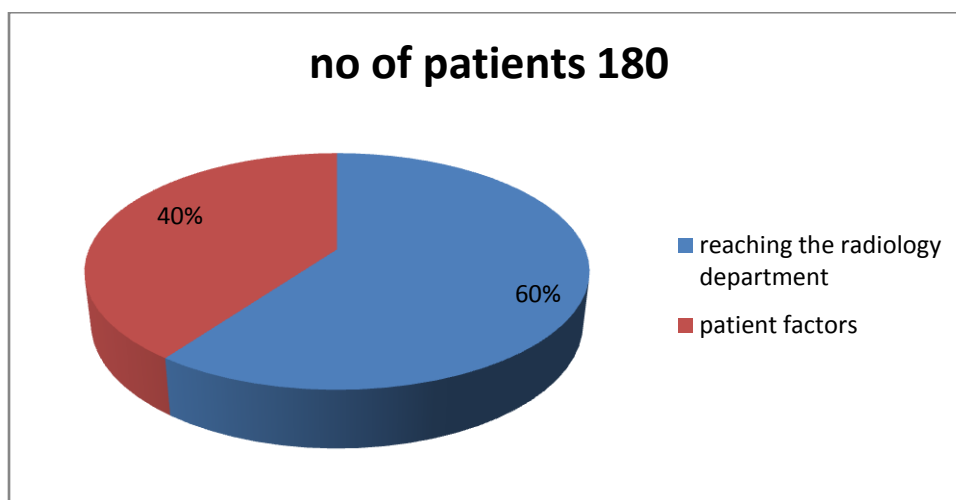
Time	No. of patients
less than 5 mins	118
5-10mins	34
greater than 10mins	28
Total	180

Graph13: Waiting time for registration of Ultrasound



Interpretation: The above graph shows that waiting time for registration is less than 5 mins for 118 patients, between 5 to 10 mins for 34 patients and greater than 10 mins for 28 patients.

Graph 14: Reasons for delay in registration of Ultrasound



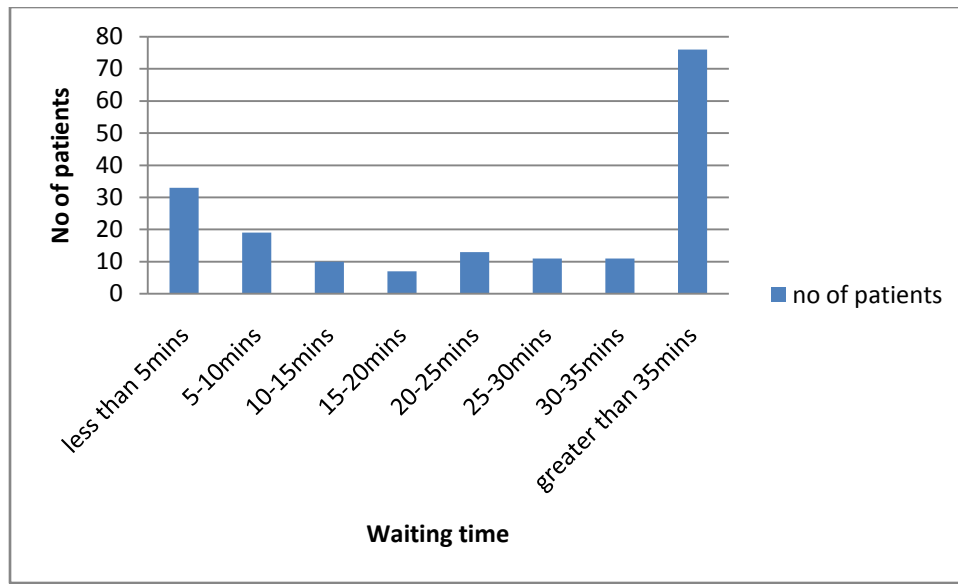
Interpretation: : The above pie chart shows that about 60% patients take time to reach the radiology department as the reception is far from the department and about 40% patients are delayed for registration because some of them are package patients so they go for other tests after billing and some patients goes to cafeteria

- **Average waiting time for procedure of Ultrasound-** 37mins

Table 8: Waiting time for procedure of Ultrasound

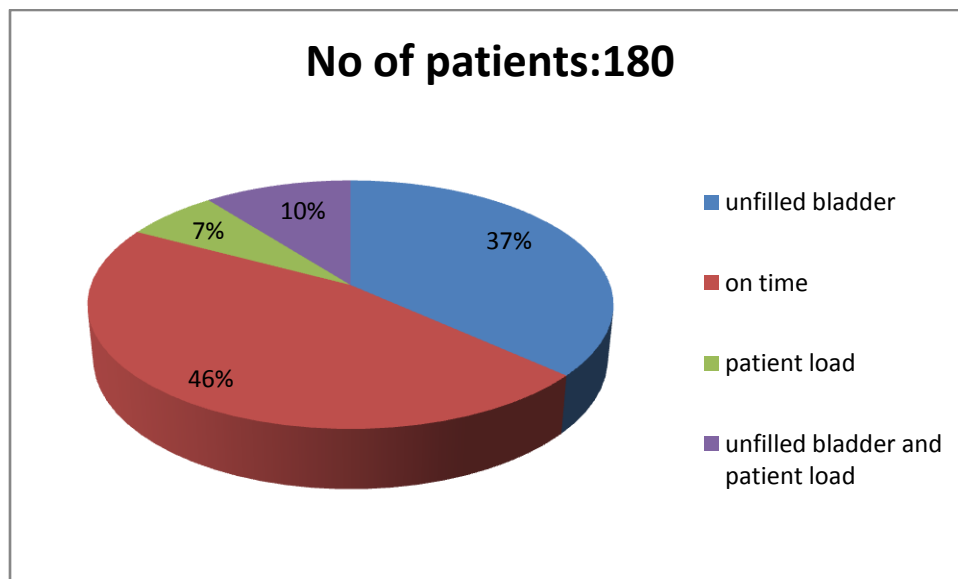
Waiting time	No. of patients
less than 5mins	33
5 – 10 mins	19
10 – 15 mins	10
15 – 20 mins	7
20 – 25 mins	13
25 – 30 mins	11
30 – 35 mins	11
Greater than 35mins	76
Total	180

Graph 15: Waiting time for procedure of Ultrasound



Interpretation: The above graph shows that waiting time is greater than 35 mins for 76 patients, less than 5 mins for 33 patients, and rest of patients have waiting time in between 5 minutes to 35 mins.

Graph 16: Reasons for delay in procedure of Ultrasound



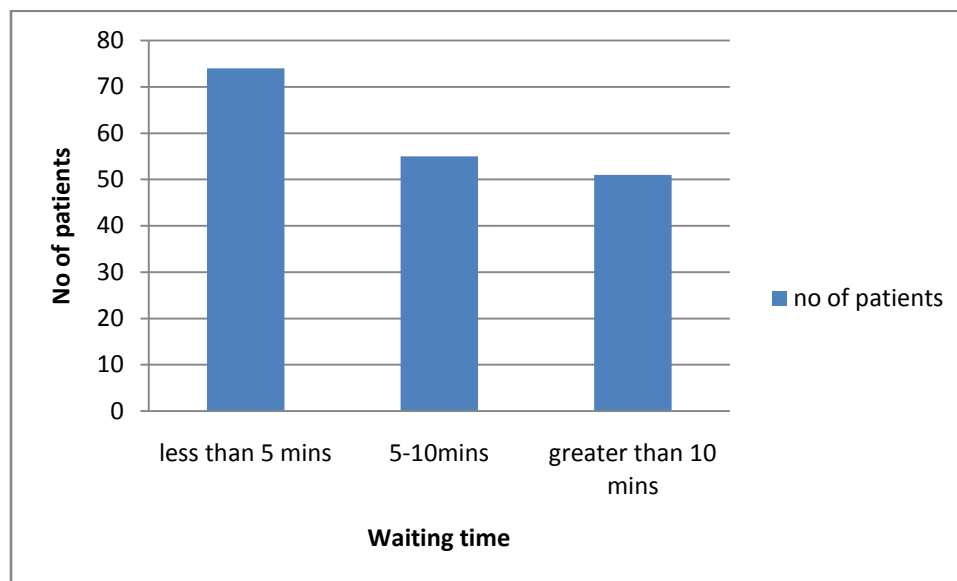
Interpretation: The above pie chart shows that for about 37% patients delay in procedure occurs due to unfilled bladder, for 10% patients delay occurs due to unfilled bladder and patient load, for 7% patients delay occurs due to patient load whereas for 46% patients there is no waiting time for procedure.

- **Average waiting time for reporting of Ultrasound – 10 mins**

Table 9: Waiting time for reporting of Ultrasound

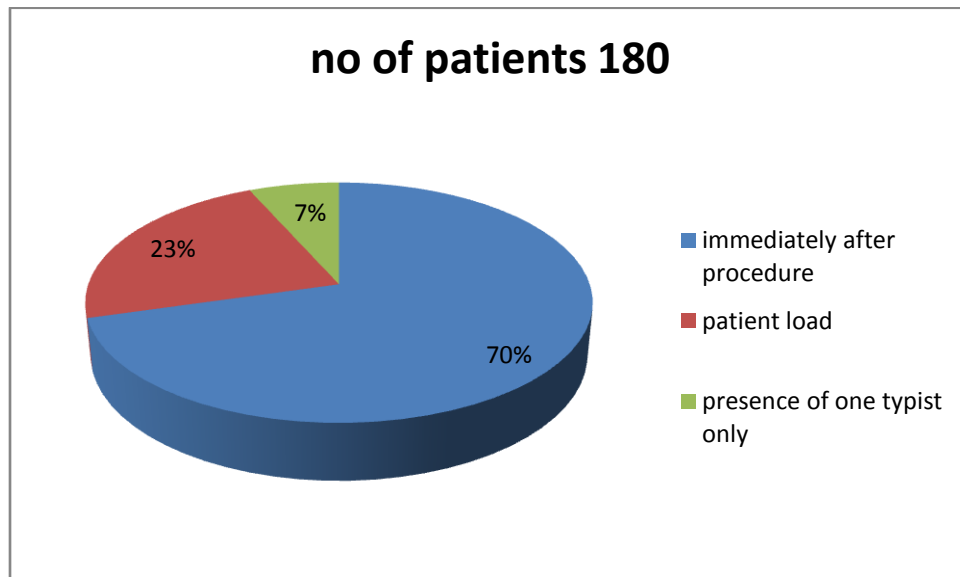
Waiting time	no of patients
Less than 5 mins	74
5 - 10mins	55
Greater than 10 mins	51
Total	180

Graph 17: Waiting time for reporting of Ultrasound



Interpretation: The above graph shows that waiting time for reporting is less than 5 mins for 74 patients, between 5 to 10 mins for 55 patients and greater than 10 mins for 51 patients

Graph 18: Reasons for delay in reporting of Ultrasound



Interpretation: The above pie chart shows that for about 70% patients reporting take place on time whereas for about 23% patients delay occurs due patient load and for 7% of patients delay occurs because at the time of our study there was presence of one typist only.

7. Recommendations

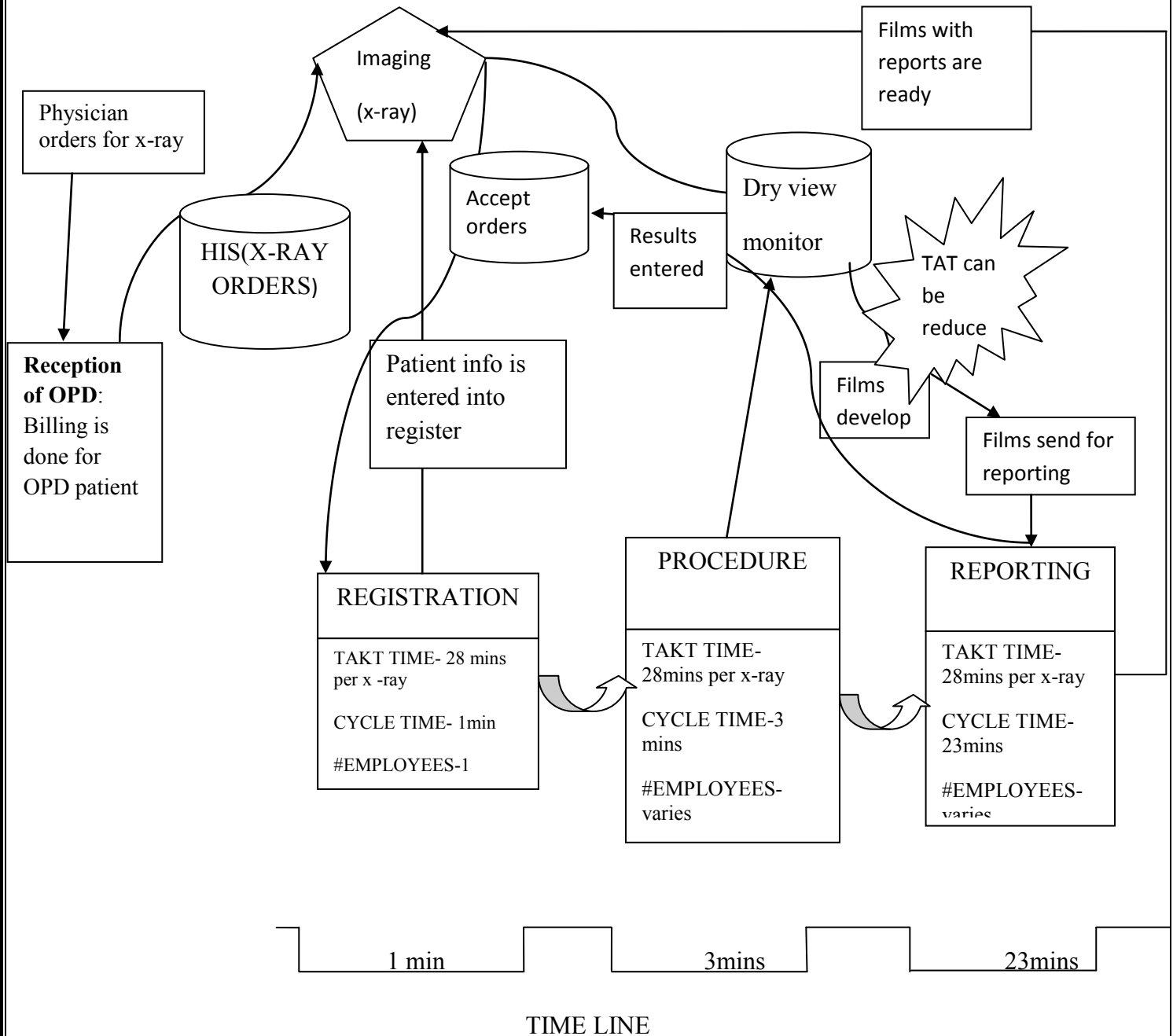
- To reduce the waiting time for registration, there can be separate billing counter in the radiology department for imaging/radiology services as time is taken to reach the radiology department.
- Package patients should be shifted to the diagnostic centre of alchemist hospital so as to decrease the waiting time for registration.
- Coupon system can be allotted to patient, so that they know how long they had to wait for their turn.

Or

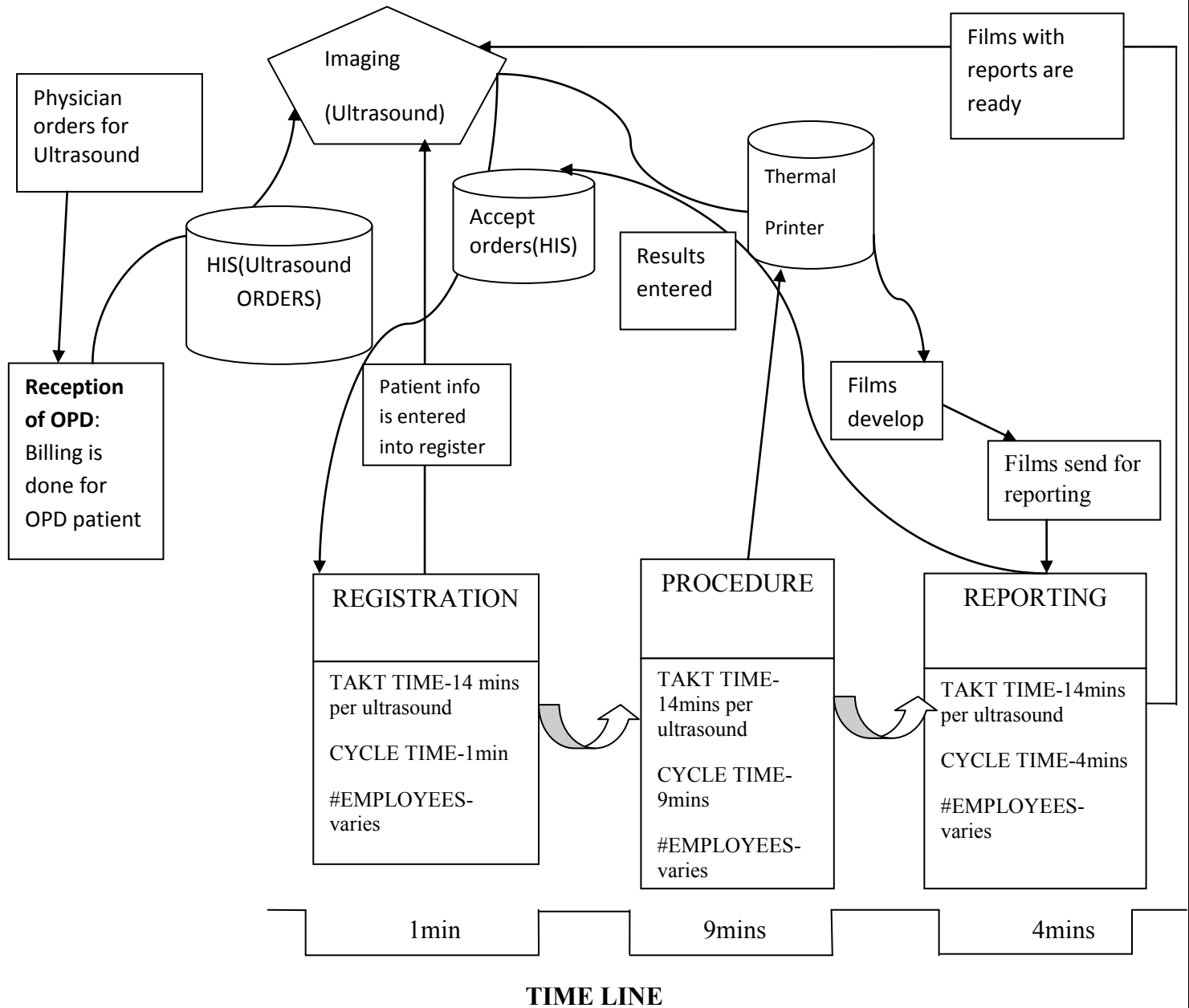
- Numbers can be written on bills to improve the, QUEING SYSTEM.
- Wall mounted digital display should be there so that patients are well prepared of their turn in advance.
- For IPD patients different time slots should be given (eg. afternoon slots).
- Radiographers can be advised to give X- ray films on time for reporting without keep waiting for other films to come.
- Patients and their attendants can be given some reading material to read.
- When there is presence of one typist only, other MT should be called from the diagnostic centre so as to decrease the waiting time for reporting.
- Simultaneous reporting of X-rays can be done so as to reduce the TAT for X-ray

With the above recommendations the current state map of X-ray and Ultrasound can be changed into future state map with reduction in waiting time for registration, procedure and reporting.

FUTURE STATE MAP FOR X-RAY



FUTURE STATE MAP FOR ULTRASOUND:



References

- [1] Taylor FW (1912) Scientific Management. In: Pugh DS (ed) (1997) Organization theory: selected readings. Penguin Books, London, pp 275-295
- [2] Ohno T (1995) Toyota production system: beyond large scale production, Productivity Press, Portland
- [3] Womack JP, Jones DT (2003) Lean thinking: banish waste and create wealth in your corporation. Simon & Schuster, New York
- [4] Insights Imaging. Jun 2011; 2(3): 267–273. Published online Mar 22, 2011. doi: [10.1007/s13244-010-0044-5](https://doi.org/10.1007/s13244-010-0044-5), Jens Karstoft & Lene Tarp, Department of Radiology, Odense University Hospital, 5000 Odense, C Denmark, Jens Karstoft
- [5] Jimmerson, C., Weber, D., & Sobek, D. (2005). Reducing waste and errors: piloting lean principles at Intermountain Healthcare. *Joint Commission Journal on Quality and Safety*,, 249-257.

II. A Case Study on NABH: Gap Analysis of Access, Assessment and Continuity of Care (AAC)

1. Introduction and scope of study

NABH ACCREDITATION:

National Accreditation Board for Hospitals and Healthcare Professionals (NABH) is a constituent board of QCI (Quality Council of India), set up with co-operation of the Ministry of Health and Family Welfare, Government of India and the Indian Health Industry. This Board caters to the much desired needs of the consumer and will set standards for progress of the Health Industry.

Patients are the biggest beneficiaries from the NABH Accreditation, as it results in a high quality of care and patient safety. The patients get services by credential medical staff. It also helps the staffs of the hospital as it provides continuous learning and good working environment.

NABH Accreditation to a hospital stimulates continuous improvement. It enables the hospital in demonstrating commitment to quality care and raises the community confidence in the services provided by the hospital. It also provides opportunity to bench mark with the best.

NABH Standards for hospitals and health care providers has 10 chapters with 102 standards and 636 objective elements which are all related to the important functions like patient centered, hospital centered, community centred, and environment centered of the hospitals. This study emphasizes mainly on the chapter of ACCESS ASSESSMENT AND CONTINUITY OF CARE in NABH standards.

ACCESS ASSESSMENT AND CONTINUITY OF CARE:

Patients are well informed of the services that an organization provides. This will facilitate in appropriately matching patients with the organization resources. Only those patients who can be cared for by the organization are admitted to the organization. Emergency patients receive life-stabilizing treatment and are either admitted (if resources are available) or transfer appropriate to the organization that has resources to take care of such patients. Outpatients who do not match the organization's resources are simply referred to the organization that have matching resources.

Patients that match the organizations resources are admitted using a defined process. Patients cared by the organization undergo an established initial assessment and periodic and regular reassessments.

Assessments include planning for utilization of laboratory and imaging services. The laboratory and imaging services are provided by competent staff in a safe environment for both patients and staff. These assessments result in formulation of a definite plan of care.

Patient is multidisciplinary in nature and encourages continuity of care through well defined transfer and discharge protocols. These protocols include transfer of adequate information with the patient.

GAP ANALYSIS:

Gap analysis is a component of the preparatory phase of NABH ACCREDITATION PROGRAMME. It is a tool that helps an organization to compare its actual performance with its potential performance. At its core are two questions –“where are we?” and –“where do we want to be?”

The goal of gap analysis is to identify the gap between the optimized allocation and integration of the inputs, and the current level of allocation. This helps provide the company with insight into areas which could be improved. The gap analysis process involves determining, documenting and approving the variance between business requirements and current capabilities. Once the general expectation of performance in the industry is understood, it is possible to compare that expectation with the organization’s current level of performance. This comparison becomes the gap analysis. Such analysis can be performed at the strategic or operational level of an organization. Gap analysis is a formal study of what the organization is doing currently and where it wants to go in the future. This study will help to identify various gaps in access assessment and continuity of care provided in hospital and enables the staff to take necessary actions to improve it.

2. Review of Literature

The National Accreditation Board for Hospitals & Healthcare Providers (NABH) Standards is today the highest benchmark standard for hospital quality in India. Though developed by the Quality Council of India on the lines of International Accreditation Standards like the JCI, ACHS and the Canadian Hospital Accreditation Standards, the NABH is however seen as a more practical set of Standards, topical and very relevant to India's unique healthcare system requirements.

NABH standards

- Patient centred standards
 1. Access, Assessment and Continuity of Care (AAC)
 2. Care of Patients (COP)
 3. Management of Medication (MOM)
 4. Patient Rights and Education (PRE)
 5. Hospital Infection Control (HIC)

- Organization cantered standards
 1. Continuous Quality Improvement (CQI)
 2. Responsibilities of Management (ROM)
 3. Facility Management and Safety (FMS)
 4. Human Resource Management (HRM)
 5. Information Management System (IMS)

Within just 2 years of its launch, the Indian Accreditation Standards, the NABH was accepted by ISQUA, the International Society for Quality Assurance in Healthcare, as an International Accreditation on par with the world's best.

3. Objectives

- To collect data for self assessment of NABH Chapter 1 i.e. –Access assessment and continuity of care”
- To identify the gaps present between the optimized allocation of the inputs and current level of allocation.

4. Methodology

Study area: Various departments of the hospital [Reception area, radiology department, laboratory (diagnostic centre), IPD, Emergency department]

Study method: Descriptive method

Study period: 10 days (11th April-21st April) excluding Sundays.

Study timings: 9.00am-5.30pm

Sample size: 16 (Doctors, Nursing staff, Laboratory staff, Radiology technicians, Emergency staff,)

Data collection method: Primary data is collected through in depth interviews with the staff

Secondary data is collected through various manuals.(see Annexure)

5. Findings

We have used **self assessment evaluation criteria** for each standard and objective elements of Chapter-1 of NABH as follows:

Compliance to the requirement: 10

Partial compliance to the requirement: 5

Non-compliance to the requirement: 0

Not Applicable: NA

Evaluation Criteria during final assessment:

- ☐ No individual standard should have more than one zero to qualify.
- ☐ The average score for individual standard must not be less than 5.
- ☐ The average score for individual chapter must not be less than 7.
- ☐ The overall average score for all standards must exceed 7.

By applying this criteria, the total score for Chapter 1 comes out to be 9.4. This score is less than 10 because in certain objective elements there occurs presence of partial compliance. (See ANNEXURE)

6. Gap Analysis

Objective element	Gap	Documentation	Implementation	Recommendation
AAC 1(b)	Signage bilingually not present	Documentation is present	No implementation is there	Bilingually signages should be displayed
AAC 4(g)	Lack of documented plan of care during initial assessment	Policy for Initial Assessment, Reassessment & Continuity of Care is present	Implementation is not done in the desired way.	Proper implementation should be done in the plan of care document.
AAC 4(h)	Preventive aspect of care is not mentioned	Policy for Initial Assessment, Reassessment & Continuity of Care is present	Not mentioned in the plan of care document	Preventive aspect of care should be mentioned in the document of plan of care and should be followed.
AAC 5(c)	In-patients reassessment plan of care is not monitored and modified.	Policy for Initial Assessment, Reassessment & Continuity of Care is present	No implementation is there	It should be thoroughly monitored as well as modified
AAC 7(c)	Lack of surveillance of lab test results	Documentation is there in lab manual	Not implemented	Periodic surveillance of lab test results should be carried out.
AAC 9(i)	Certain imaging tests are not outsourced based on quality assurance system	Documentation is there is radiology manual	Not implemented	Imaging tests should outsourced and proper MoU should be signed.
AAC 10(b)	No validation and verification of imaging	Documentation is there in Quality audit	No implementation is being done	Validation and verification of imaging results

	methods done.	report		should be done through in house method.
AAC 10(c)	No surveillance of imaging methods	Documentation is there in the quality audit report	No implementation is there	Periodic surveillance of imaging methods should be done.

7. ANNEXURE

Chapter 1: ACCESS, ASSESSMENT AND CONTINUITY OF CARE (AAC)						9.4
Elements			Docu- mentation (Yes/ No)	Impleme- ntation (Yes/ No)	Evidenc e (cross reference to document s/ manuals etc.)	Sco- res (0/ 5/ 10)
AAC.1: The organization defines and displays the services that it provides.						8
A	The services being provided are clearly defined and are in consonance with the needs of the community.		Yes	Yes	Policy on Scope of Services	10
B	The defined services are prominently displayed.		Yes	Yes	Signages bilingually not present	5
C	The staff is oriented to these services.		Yes	Yes	Training records	10
AAC.2: The organization has a well-defined registration and admission process.						10.0
A	Documented policies and procedures are used for registering and admitting patients.		Yes	Yes	Front Office Manual	10
b	The documented procedures address out- patients, in-patients and emergency patients.		Yes	Yes	Front Office Manual	10
c	A unique identification number is generated at the end of registration.		Yes	Yes	Front Office Manual	10
d	Patients are accepted only if the organization can provide the required service.		Yes	Yes	Front Office Manual	10
e	The documented policies and procedures also address managing patients during non-availability of beds.		Yes	Yes	Front Office Manual	10
f	The staff is aware of these processes.		Yes	Yes	Training records	10
AAC.3: There is an appropriate mechanism for transfer (in and out) or referral of patients.						10

	a	Documented policies and procedures guide the transfer-in of patients to the organization.	Yes	Yes	Front Office Manual	10
	b	Documented policies and procedures guide the transfer-out/referral of unstable patients to another facility in an appropriate manner.	Yes	Yes	Front Office Manual	10
	c	Documented policies and procedures guide the transfer-out/referral of stable patients to another facility in an appropriate manner.	Yes	Yes	Front Office Manual	10
	d	The documented procedures identify staff responsible during transfer/referral	Yes	Yes	Front Office Manual	10
	e	The organization gives a summary of patient's condition and the treatment given	Yes	Yes	Front Office Manual	10
AAC.4: Patients cared for by the organization undergo an established initial assessment.						8.5
	a	The organization defines and documents the content of the initial assessment for the out-patients, in-patients and emergency patients	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
	b	The organization determines who can perform the initial assessment.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
	c	The organization defines the time frame within which the initial assessment is completed based on patient's needs	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
	d	The initial assessment for in-patients is documented within 24 hours or earlier as per the patient's condition as defined in the organization's policy	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10

e	Initial assessment of in-patients includes nursing assessment which is done at the time of admission and documented.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
f	Initial assessment includes screening for nutritional needs	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
g	The initial assessment results in a documented plan of care	Yes	No	Policy for Initial Assessment, Reassessment & Continuity of Care	5
h	The plan of care also includes preventive aspects of the care where appropriate	Yes	No	Policy for Initial Assessment, Reassessment & Continuity of Care	5
i	The plan of care is countersigned by the clinician in-charge of the patient within 24 hours.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
j	The plan of care includes goals or desired results of the treatment, care or service	Yes	No	Policy for Initial Assessment, Reassessment & Continuity of Care	5
AAC.5: Patients cared for by the organization undergo a regular reassessment					9

	a	Patients are reassessed at appropriate intervals.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
	b	Out-patients are informed of their next follow up where appropriate.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
	c	For in-patients during reassessment the plan of care is monitored and modified where found necessary.	Yes	No	Policy for Initial Assessment, Reassessment & Continuity of Care	5
	d	Staff involved in direct clinical care document reassessments.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
	e	Patients are reassessed to determine their response to treatment and to plan further treatment or discharge.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
AAC.6: Laboratory services are provided as per the scope of services of the organization.						10
	a	Scope of the laboratory services are commensurate to the services provided by the organization.	Yes	Yes	Lab manual	10
	b	The infrastructure (physical and manpower) is adequate to provide for its defined scope of services.	Yes	Yes	Evidence on site	10
	c	Adequately qualified and trained personnel perform, supervise and interpret the investigations.	Yes	Yes	Employees file in HR	10
	d	Documented procedures guide ordering of tests, collection, identification, handling, safe transportation, processing and disposal of specimens.	Yes	Yes	Lab manual	10

e	Laboratory results are available within a defined time frame.	Yes	Yes	Lab manual	10
f	Critical results are intimated immediately to the concerned personnel.	Yes	Yes	Lab manual	10
g	Results are reported in a standardized manner.	Yes	Yes	Lab information system	10
h	Laboratory tests not available in the organization are outsourced to organization(s) based on their quality assurance system.	Yes	Yes	Lab manual	10
AAC.7: There is an established laboratory quality assurance programme					9
a	The laboratory quality assurance programme is documented.	Yes	Yes	Lab manual	10
b	The programme addresses verification and/or validation of test methods.	Yes	Yes	Lab manual	10
c	The programme addresses surveillance of test results.	Yes	No	Evidence on site	5
d	The programme includes periodic calibration and maintenance of all equipment.	Yes	Yes	Evidence on site	10
e	The programme includes the documentation of corrective and preventive actions.	Yes	Yes	Evidence on site	10
AAC.8: There is an established laboratory safety programme.					10
a	The laboratory safety programme is documented.	Yes	Yes	safety manual	10
b	This programme is aligned with the organization's safety programme.	Yes	Yes	Safety manual	10
c	Written procedures guide the handling and disposal of infectious and hazardous materials.	Yes	Yes	Biomedical waste policy	10
d	Laboratory personnel are appropriately trained in safe practices.	Yes	Yes	Training record	10
e	Laboratory personnel are provided with appropriate safety equipment / devices.	Yes	Yes	Evidence on site	10
AAC.9: Imaging services are provided as per the scope of services of the organization.					9.4
a	Imaging services comply with legal and other requirements.	Yes	Yes	AERB guidelines followed	10
b	Scope of the imaging services are commensurate to the services provided by the organization.	Yes	Yes	Radiology Manual	10
c	The infrastructure (physical and manpower) is adequate to provide for its defined scope of services.	Yes	Yes	Evidence on site	10
d	Adequately qualified and trained personnel perform, supervise and interpret the investigations.	Yes	Yes	Qualification in Personal file with HR Department	10

e	Documented policies and procedures guide identification and safe transportation of patients to imaging services.	Yes	Yes	Radiology Manual	10
f	Imaging results are available within a defined time frame.	Yes	Yes	Radiology Manual	10
g	Critical results are intimated immediately to the concerned personnel.	Yes	Yes	Radiology Manual	10
h	Results are reported in a standardized manner.	Yes	Yes	HIS	10
i	Imaging tests not available in the organization are outsourced to organization(s) based on their quality assurance system.	Yes	No	Radiology Manual	5
AAC.10: There is an established Quality assurance programme for imaging services.					8
a	The quality assurance programme for imaging services is documented.	Yes	Yes	Radiology Manual	10
b	The programme addresses verification and/or validation of imaging methods.	Yes	No	QA Report	5
c	The programme addresses surveillance of imaging results.	Yes	No	Quality Audit Report	5
d	The programme includes periodic calibration and maintenance of all equipment.	Yes	Yes	QA Report	10
e	The programme includes the documentation of corrective and preventive actions.	Yes	Yes	Biomedical Record	10
AAC.11: There is an established radiation safety programme.					10
a	The radiation safety programme is documented.	Yes	Yes	Radiation Safety Manual	10
b	This programme is aligned with the organization's safety programme.	Yes	Yes	Safety Manual	10
c	Handling, usage and disposal of radio-active and hazardous materials as per statutory requirements.	Yes	Yes	Radiation Safety Manual	10
d	Imaging personnel are provided with appropriate radiation safety devices.	Yes	Yes	physically verified	10
e	Radiation safety devices are periodically tested and results documented.	Yes	Yes	Test Reports	10
f	Imaging personnel are trained in radiation safety measures.	Yes	Yes	Training Record	10
g	Imaging signage are prominently displayed in all appropriate locations.	Yes	Yes	Evidence on site	10
AAC.12: Patient care is continuous and multidisciplinary in nature.					10.0

a	During all phases of care, there is a qualified individual identified as responsible for the patient's care.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
b	Care of patients is coordinated in all care settings within the organization.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
c	Information about the patient's care and response to treatment is shared among medical, nursing and other care providers.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
d	Information is exchanged and documented during each staffing shift, between shifts, and during transfers between units/departments.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
e	Transfers between departments/units are done in a safe manner.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
f	The patient's record (s) is available to the authorized care providers to facilitate the exchange of information.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10

	g	Documented procedures guide the referral of patients to other departments/ specialties.	Yes	Yes	Policy for Initial Assessment, Reassessment & Continuity of Care	10
AAC.13: The organization has a documented discharge process.						10
	a	The patient's discharge process is planned in consultation with the patient and/or family.	Yes	Yes	Discharge Policy	10
	b	Documented procedures exist for coordination of various departments and agencies involved in the discharge process (including medico-legal and absconded cases).	Yes	Yes	Discharge Policy	10
	c	Documented policies and procedures are in place for patients leaving against medical advice and patients being discharged on request	Yes	Yes	Discharge Policy	10
	d	A discharge summary is given to all the patients leaving the organization (including patients leaving against medical advice and on request).	Yes	Yes	Discharge Policy	10
AAC.14: Organization defines the content of the discharge summary.						10
	a	Discharge summary is provided to the patients at the time of discharge.	Yes	Yes	Discharge Policy	10
	b	Discharge summary contains the patient's name, unique identification number, date of admission and date of discharge.	Yes	Yes	Discharge Summary	10
	c	Discharge summary contains the reasons for admission, significant findings and diagnosis and the patient's condition at the time of discharge.	Yes	Yes	Discharge Summary	10
	d	Discharge summary contains information regarding investigation results, any procedure performed, medication administered and other treatment given.	Yes	Yes	Discharge Summary	10
	e	Discharge summary contains follow up advice, medication and other instructions in an understandable manner.	Yes	Yes	Discharge Summary	10
	f	Discharge summary incorporates instructions about when and how to obtain urgent care.	Yes	Yes	Discharge Summary	10
	g	In case of death, the summary of the case also includes the cause of death.	Yes	Yes	Discharge Summary	10