Shalby Hospital, Ahmedabad

By

Dr. Riya Roy

Study on Patient Turnaround Time in Radiology Department

PGDHM
2012-2014

International Institute of Health Management Research

Dissertation Training

At

Shalby Hospital, Ahmedabad

Study on Patient Turnaround Time In Radiology Department

By

Dr. Riya Roy

Under the guidance of
Asst.Prof. (Mrs.) Vanishree

Post Graduate Diploma in Hospital and Health Management

Year 2012-14

International Institute of Health Management Research New Delhi

The certificate is awarded to

Riya Roy

In recognition of having successfully completed her
Internship in the department of

Clinical Application

And has successfully completed her Project
On
Study on Patient Turn Around Time in Radiology Department

17/05/2014

Shalby Hospital, Ahmedabad

She comes across as a committed, Sincere & diligent person
who has a strong drive & zeal for learning
We wish her all the best for future endeavors

Training & Development

Head-Human Resources

SHALBY LTD. AHMEDABAD Reg. No. 061000596

IIHMR, Dwarka, New Delhi

TO WHOM SO EVER MAY CONCERN

This is to certify that **Riya Roy** student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at Shalby Hospital, Ahmedabad From 05/03/2014 to 17/05/2014.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical. The Internship is in fulfillment of the course requirements. I wish him all success in all his future endeavors.

22/5/2014

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Dean, Academics and Student Affairs
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Mrs. Vanishree
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Certificate of Approval

The following dissertation titled **"STUDY OF PATIENT TURN AROUND TIME IN RADIOLOGY DEPARTMENT"** at **"SHALBY HOSPITAL, AHMEDABAD"** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name	Signature
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Dr. Radhika S. Adholeya	Adholeya

IIHMR, Dwarka, New Delhi

Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Roy Riya,** a graduate student of the **Post Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. She is submitting this Dissertation titled **"A Study on Patient Turn Around Time of Radiology"** at **"Shalby Hospital"** in partial fulfillment of the requirements for the award of the **Post-Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standards and to the best of our knowledge no part of this has been reproduced from any other dissertation, monograph, report or book.

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INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled Study on Turn around Time of Radiology Department and submitted by Riya Roy.....
Enrollment No...PGA/12/45.....

Under the supervision of ....Mr. Nimit Shah, Asst. Manager

for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from .5th March 2014 to .17th May 2014.....embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

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Signature 22/5/14

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HOSPITALS

Hereby certifies that

Dr. Riya Roy

Student of PGD-HHM at International Institute of Health Management Research, Delhi

has successfully completed her dissertation in the

Clinical Application

as a part of academic curriculum during the period of

5th March 2014 to 17th May 2014

at our Organization.

NABH ISOQAR QUALITY ASSURED

VIKRAMSINH MAHIDA
Sr. Vice President– HR & ADMIN.
Issued on: 17/05/2013

FEEBACK FORM

Name Of the student: Riya Roy

Dissertation Organization: Shalby Hospital

Area of dissertation: Clinical Applications

Attendance: 100%

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Strengths: Hardworking, sincere, very patient.

Suggestions for Improvement: Not for now

Signature of the office in charge/organization Mentor (Dissertation)

Date: 16/05/14
Place: Ahmedabad.

IIHMR DELHI, DWARKA 2014

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Undertaking a project is never a one-person job. It's always involves help from other person who are either reviewing your work or teaching your things. It would have never been completed without the co-operation and sincere efforts of all the staff members of hospital who guided me throughout this project.

I want to express my gratitude and sincere thanks to D**r MedhaviniAyachit (Medical Superintendent, Shalby Hospital, Ahmedabad), Mr.KuntalAcharya (Manager, Clinical Application) & Dr.Jasmin Baldha (Quality Head)** who permitted me to conduct the project in Shalby Hospital,Ahmedabad & for his time to time guidance & kind help in the completion of this project.

I would like to thank to all clinical application team **Dr.Hemal Patel, Dr.Ashish Patel, Mr.Nimit shah** of Shalby Hospital, Ahmedabad, who not only guided me every step, also motivated me to put sincere efforts despite various constraints Without that, this project could not have been completed.

Last but not the least I would like to thank my institution, my faculty members and my mentor Mrs.Vanishree **(Assistant Professor,IIHMR)** without whose guidance this project would have been a distant reality.

Making a project gives you very difficulties as input but output is a realize you that you have solved a problem using what you have learned till now.
Dr. Riya Roy

Signature

EXECUTIVE SUMMARY

This project is done in Shalby Hospital, Ahmedabad titled "**Study on Turnaround Time in Radiology Department**". The study is done on IPD and OPD patients include only who arrived in the radiology for the CT scan, MRI, USG, and X-Ray. Study is descriptive and analytical in nature, a sample size of 200 each 50(CT scan, MRI, USG, and X-Ray) is observed from patient request time to reporting. Sample is taken randomly as per the convenience or availability of patient and me so sampling is random and convenient in nature. Data is collected through checklist and analyzed through descriptive analyzing method using average.

Result of the study showed that maximum TAT and waiting time is of MRI. In MRI Procedure time is long and patient flow as compared to staff is more which leads to increase TAT and waiting time. In x-Ray there is minimum TAT and waiting time and it is done approximately in defined time period. As in Hospital TKR and THR is done more so staff has to provide the report within defined time period to make of report before surgery due to which TAT and waiting time is less for X-ray.

ACRONYMS / ABBREVIATIONS

- ADR Adverse Drug Reaction
- AHU Air Handling Unit
- AMC Annual Maintenance Check
- CME Continuous Medical Education
- CR No. Central Registration Number
- CSSD Central Sterile Supply Department
- CT Computed Tomography
- ECG Electro-Cardio Gram
- HOD Head of Department
- HRD Human Resource Department
- ICU Intensive Care Unit
- IPD In Patient Department
- MRD Medical Records Department
- NSI Needle Stick Injury
- OPD Out Patient Department
- PRE Patient Relation Executive
- RCA Root Cause Analysis
- RMO Resident Medical Officer
- RSO Radiation Safety Officer
- TMT Tread Mill Test
- TPA Third Party Administrator
- C.C.U Cardiac care unit
- M.I.C.U Medical intensive care unit
- S.I.C.U Surgical intensive care unit
- I.C.C.U Intensive critical care unit
- IP No. Indoor patient identification number
- PRO Patient Relation officer
- MOD Manager On Duty
- NBM Nil By Mouth

LIST OF TABLES AND FIGURES

TABLES

FIGURES

CONTENT

HOSPITAL PROFILE

Shalby is the leading multi-speciality tertiary care healthcare institutions in Western India. We provide world class treatment for all types of diseases at the most affordable rates. Patients come from all over India and the world for treatment in Shalby Hospitals.

Modest Beginning: Shalby began its journey as a Joint Replacement Centre in 1994 by Dr.Vikram Shah. It has made tremendous progress in this field, as can be seen by the fact that **the highest number of joint replacement surgeries done in a single hospital anywhere in the world are done in Shalby Hospitals' S G Road, Ahmedabad Unit [Main Branch]**. Till date, over 40,000 joint replacement surgeries of different types have been done by the in house surgeons of Shalby Hospitals.

Quality: We render the best patient care through a professional approach. We believe in continual improvements in quality of our services. We implement quality improvement programs across all the departments of our hospitals with the aim of offering the best services to our patients.

The quality of our healthcare services has been certified by accreditations bodies like the **NABH, NABL and ISO 9001:2008** and recognised by most prestigious awards like the **Rajiv Gandhi National Quality Award**, the **FICCI award** and many more.

Dental Cosmetic &Implantology Centre: Shalby's 'Dental Cosmetic and Implantology Centre' established in 1995 is a state of the art unit in the field of dental implants and all other comprehensive dental treatments. It offers world class dental care in all aspects of dentistry. People from all over the world regularly visit Shalby's dental clinic for high end procedures, especially dental implants.

Expansion: Shalby now has multi-speciality hospitals in Ghuma [Ahmedabad], Vapi [Gujarat] and Mapusa [Goa]. The 30 bed hospital where Shalb ybegan now houses a state of the art Assisted Reproductive Technologies [IVF] centre.

Shalby offers OPD services in all major cities of India like Mumbai, Delhi, Kolkatta, Surat, Vadodara, Jaipur, Jodhpur, Indore and in African countries like Kenya [Nairobi].

Future-It is the vision of Shalby to continually improve and grow and fulfill its mission **'TO PRESERVE AND SUSTAIN QUALITY HUMAN LIFE'.**

Chairman's Message

Our objective is to provide high quality healthcare to people across the world. We aim to improve the quality of life of patients through compassion and dedication. We are geared to offer the best of healthcare services at competitive costs to people from across the globe. We are proud to have put Ahmedabad on the medical tourism map.

Vision

To be among the best Joint Replacement centres of the world, and a preferred medical institution for treatment of Cardiac, Spine, Oncology, Trauma and other medical conditions through world class technology, human expertise and highest professional standards at competitive costs.

Mission

To preserve and sustain quality human life as humanely as it can be done through painless processes, facilitation of speedy recovery, and indigenization of medical technology and to promote wellness & awareness through best practices at the highest value for all concerned.

DEPARTMENT IN SHALBY HOSPITAL

Arthoscopy	Neuro surgery
Bariatric Surgery	Nephrology
Cardiology	Nutritional diet
Cardio thoracic Surgery	Orthopaedics
Critical care	Oncology
Cosmetic surgery & cosmetology	Onco surgery
Dental science	Ophthalmology
Dermatology	Pain clinic
Diabetology	Pathology
Eyes, Nose & Throat surgery	Physiotherapy
Endoscopy & Laparoscopy	Pulmonology
Kidney transplant	Plastic surgery
General surgery	Gynaecology & obstetrics
Gastroenterology	Rheumatology
G.I. Surgery	Radiology
Joint Replacement surgery	Spine surgery
Internal medicine	Trauma surgery
Infectious disease	Urology
Minimal invasive surgery	Vascular surgery
Neurology	

AUXILIARY SERVICES

Ambulance Services
Emergency Services
Health check-up service
CSSD
Linen Services
Stores
Medical gases
Security
Kitchen & Cafeteria
Bio-medical Engineering
Maintenance& Engineering
Mortuary services
Medical Record Department
Administrative Services
Hospital Management Information system
Clinical Research
Bio-medical Waste Management
Hospital infection control
Pharmacy

LAYOUT OF HOSPITAL

Conference hall, Library, Doctor's lounge, Clinical Research room, Kitchen, Cafeteria, Cosmetic POD	9th floor
Twin Deluxe Room	8th floor
VIP suite, Deluxe Room	7th floor
Premiere Rooms	6th floor
AC twin Room, Economic Room	5th floor
Twin room, Cafeteria	4th floor
OT,MICU,POD	3rd floor
Corporate Block ,CSSD	L floor
OT,SICU	2nd floor
OPD,CCU, Cath lab	1st floor
Ortho OPD, Dental OPD, Reception, Admissions, Mediclaim ,OP pharmacy, Prayer room, Billing, Corporate help desk, Travel desk, Cafeteria, Ophthalmology OPD, other POD	Ground floor
ER room, X-ray, Sonography, CT scan ,Mammography, MRI, Pathology, Health check-up, Dialysis, ER Billing	Basement 1
Bio-medical engineering, Mortuary, Medical Records department, Linen Store, General store, IPD pharmacy	Basement 2

INTRODUCTION

Radiology is part of the service industry and as a service provider one needs to understand quality and delivery of service. This includes knowledge of customer service, customer satisfaction and all its related issues as well as quality assurance and improvement issues.

There are five main factors that determine customer satisfaction with radiology services:

1. **Reliability** – ability to provide the service as promised to the customer and to do so accurately. In radiology, this means correct examination must be performed so that the correct views can be obtained. The report must be accurate and of high quality, regardless of who is reporting e.g., resident or consultant, and the report must answer the clinical problem of the patient.
2. **Responsiveness** – willingness and ability to help customers promptly. In radiology, this means being able to get appointments for patients quickly as well as sending the films and report soon after the examination to the referring doctor. Long waiting times for appointments and taking more than a couple of hours to generate an urgent report is generally not acceptable in most hospitals.
3. **Assurance** – the customer must feel comfortable with the competence of the service provider. Customers must get the feeling that they are receiving the best service and must have confidence in the service. In radiology, this means that the staff must not only be technically competent but must also have interpersonal skills, as they must be able to interact with both patients and referring physicians. Many radiologists do not bother to interact or talk to patients but the need for this interaction is growing, especially with interventional procedures.
4. **Empathy** – the radiologist needs to show some degree of caring and attention to customers. This again highlights the importance of interpersonal skills, which starts from front desk reception staff to the radiologist.
5. **Tangibles** – the physical appearance of the department and facilities, and the quality of the equipment. In radiology, because of high capital cost of equipment, it is not always possible to have the best equipment but it is always important that the available equipment is used correctly and the quality of work produced is of high quality. It is not advisable to take too many shortcuts to save money e.g., performing a couple of pulse sequences of a MRI scan and filming only a few images of the sequences on hard copy.

The ultimate work product of a radiology department is a finalized radiology report. Radiology stakeholders are now demanding faster report turnaround times (RTAT) and anything that delays delivery of the finalized report will undermine the value of a radiology department.

REVIEW OF LITERATURE

"Radiology Improved Processes, Reduced Procedure Time and Increased Volume and Revenue" *by SBTI (2005)*

The study was conducted in Columbus Regional Hospital (CRH) is a 325-bed medical center in Columbus, Indiana with a goal of improving patient flow in the Radiology Department, CRH leadership chartered a succession of Lean Sigma projects in CT, MRI, Ultrasound, and Diagnostic Imaging. Using the disciplined, standardized approach of Lean Sigma, the Radiology Department at Columbus Regional Hospital was able to improve processes, reduce procedure time, and increase volume and revenue. A significant factor in these was the increased capacity that allows the departments to flex up and down, depending upon demand.

"Radiologist report turnaround time: impact of pay-for-performance measures"

By GW Boland (2010)

This study was performed to evaluate the impact of radiologist pay-for-performance (PFP) program on reducing RTAT. A radiologist PFP program was used to assess its impact on RTAT for all departmental reports from 11 subspecialty divisions. Study periods were 3 months before (baseline period) and immediately after (immediate period) the introduction of the program and 2 years later after the program had terminated (post period).Results showed that Eighty-one radiologists met the inclusion criterion for the study and performed a final signature on 99,959 reports during the baseline period, 104,673 reports during the immediate period, and 91,379 reports during the post period. A radiologist PFP program appears to have a marked effect on expediting final report turnaround times, which continues after its termination.

"Mapping Turnaround Times (TAT) to a Generic Timeline: A Systematic Review of TAT Definitions in Clinical Domains" *by Bernhard Breil, Fleur Fritz, Volker Thieman† and Martin Dugas (2011)*

This study was conducted for assessing turnaround times can help to analyse workflows in hospital information systems. This paper presents a systematic review of literature concerning different turnaround time definitions. Objectives were to collect relevant literature with respect to this kind of process times in hospitals and their respective domains. They analysed the existing definitions and summarised them in an appropriate format. Search strategy was based on Pub med queries and manual reviews of the bibliographies of retrieved articles. Studies were included if precise definitions of turnaround times were available. A generic timeline was designed through a consensus process to provide an overview of these definitions. Results showed that More than 1000 articles were analysed and resulted in 122 papers. Of those, 162 turnaround time definitions in different clinical domains were identified. Starting and end points vary between these domains. More than 1000 articles were analysed and resulted in 122 papers. Of those, 162 turnaround time definitions in different clinical domains were identified. Starting and end points vary between these domains.

"Improving Turn around Time (TAT) for OPD Imaging Services Columbia Asia Hospital, Banglore" by *Dr. Harsha Rajaram (February 2010)*

In February 2010, a study conducted by the radiology department, to determine the TAT for all imaging services for outpatients revealed that only 35% of reports were delivered within 3 hours which is the target set by the hospital. Delay in delivery of reports leads to patient dissatisfaction, impacts customer care, and leads to a potential revenue loss. To seek a better understanding, patient feedback was sought to get their perception of the imaging services. The total TAT for the imaging services process was decomposed into sub-processes. Lean and Six Sigma tools were extensively used. Corrective actions to reduce TAT were applied sub-process by sub-process. The results were gratifying. The overall TAT for the imaging services process was compressed from 528 minutes to 97 minutes.

"Quality Improvement Project to Decrease Inpatient Radiology Turnaround Time: Experience at Christiana Care Health System" by *Paula L. Stillman, (2004)*

The study was conducted at Christiana Care Health System. Baseline data collected between January and April 2004 revealed that imaging report turnaround time averaged 50 hours. The "gold standard" for report turnaround is24 hours or less.1 In April 2004, only 16% of imaging reports were completed in 24 hours or less. The quality improvement team

"A Radiology Dashboard as a Tool to Improve Turn around Time of Dictated Reports" *by Alexander J Towbin (2006) Vol21(1)*

In this study a Radiology Dashboard is used as a tool to improve Turnaround time of Dictated Reports. Turnaround time for reports decreased nearly 55% over the study period. Dashboard was successful in decreasing the turnaround time for radiology reports.It causes improvement in Turnaround Time

RAIONALE OF THE STUDY

Turnaround time of RADIOLOGY DEPARTMENT is defined as the "time taken for a patient walking in for a scan and walking out with the report".
The study is undertaken to estimate and reduce the TAT in SHALBY Hospital, Ahmedabad and also find out the impact of this on the patients.

OBJECTIVE

The study was conducted with the following objectives:

General objective:

To study turnaround time in Radiology department and the root causes to highlight areas of potential process improvements

Specific objective:

- To study process flow of Radiology department.
- To find out standard time for individual procedure.
- To observe actual time for completion of procedure.
- To analyze gap between the standard and actual time for procedure.

METHODOLOGY

Research methodology is process used to collect information and data for the purpose of respective study.

STUDY AREA

This study is conducted in SHALBY HOSPITAL, AHMEDABAD

STUDY DESIGN

Study is Descriptive(applied) & Observational in nature.

STUDY PERIOD – 15th April to 15th May 2014

STUDY POPULATION

IPD and OPD patients at radiology department

In IPD patients who are taken to the Radiology and in OPD walking patients are taken.

SAMPLE SIZE – 200

50 – MRI

50 – CT Sccan

50 – X-Ray

50 - USG

TYPE OF SAMPLING

In sample patients are taken randomly as per the convenience and availability of patients and me so it is Random Convenient Sampling.

STUDY TOOL

Checklist includes Request time, IN time, Out Time, Waiting Time, Procedure Time, Reporting and TAT.

STUDY TECHNIQUE

Observation

INCLUSIVE CRITERIA

Process is observed from Patient arrival at Reception to Delivery of report to Patient.

EXCLUSIVE CRITERIA

Due to time constraint Doppler is excluded.

TAT from Consultant's advice to Patient arrival at reception

DATA COLLECTION METHOD:

Data collection:

Primary data: Primary data is that data which is collected for the first time and are fresh. The various methods for collecting primary data are as follows:

- **Observation method**: Each procedures & processes related to the project from Patient arrival at radiology to Reporting was observed.
- **Personal interview**: It was collected by interviewing personally the In-charge of the department concerned with the process of department.
- **Questions:** The related questions were asked to only respective staff of department

Secondary data: Secondary data is that data which already exists & collected by someone else. The researcher goes through the secondary data for getting some previous information related to the topic. The sources of secondary data are:

- Manual of respective department to know policies and procedures.
- HMIS Module of Radiology department
- Departmental Registers

PLAN FOR DATA ANALYSIS

The data is analyzed through descriptive analyzing method like; Average.

INTRODUCTION OF RADIOLOGY DEPARTMENT

RADIOLOGY DEPARTMENT:

"The aim of the Radiology Department is to provide a high quality responsive diagnostic service with rapid response to requests, short waiting times and prompt issue of reports".

THE RADIOLOGY DEPARTMENT:

It is made up of the following satellite departments.

- X-Ray/OPG
- CT
- MRI
- Ultrasound/Doppler

LOCATION

Basement 1

OPENING HOURS

24*7

Different Diagnostic Services:

- **Magnetic Resonance Imaging (MRI):**

MRI is a non invasive method of mapping the internal structures of the body without the use of ionizing radiation using radio frequency signals in magnetic field. With 16 times faster imaging, the MRI room transforms itself into a patient-friendly ambience with patient's choice of animations, synchronized soothing music and room lighting.

- **Computerized Tomography Scan (CT Scan) :**

CT scanner is a special kind of X-ray machine. Instead of sending out a single X-ray through your body as with ordinary X-rays, several beams are sent simultaneously from different angles. The scanner is particularly good at testing for bleeding in the brain, for aneurysms (when the wall of an artery swells up), brain tumors and brain damage. It can also find tumors and abscesses throughout the body and is used to assess types of lung disease.

In addition, the CT scanner is used to look at internal injuries such as a torn kidney, spleen or liver; or bony injury, particularly in the spine. CT scanning can also be used to guide biopsies and therapeutic pain procedures.

Two types CT SCAN

1) CT 1 Slice
2) CT 64 Slice

1 Slice CT Scan in single slice. 64 Computed Tomography (CT) scan refers to the newest generation in CT scan technology and is also known as "64-slice CT." The 64 "slices" refer to the number of detectors that are present on a CT scanner.
One of the major advances with 64 slice CT scanning has been vast improvements in cardiac heart scans. The heart is difficult to visualize because it remains in movement, constantly changing in shape and size as the heart beats. New generation 64 slice CT heart scans, cardiologists and radiologists can evaluate the coronary arteries and determine if there is atherosclerosis in the arteries of the heart. It also has proved valuable in the detection and exclusion of obstructive CAD (coronary artery disease).

- **Ultra-Sonography & Doppler :**

Ultrasound is used to create images of soft tissue structures, such as the gall bladder, liver, heart, kidney, female reproductive organs-- and even of babies still in the womb. Ultrasound can also detect blockages in the blood vessels. This helps the physician to find out the reasons for pain, swelling or any kind of infection in the body.

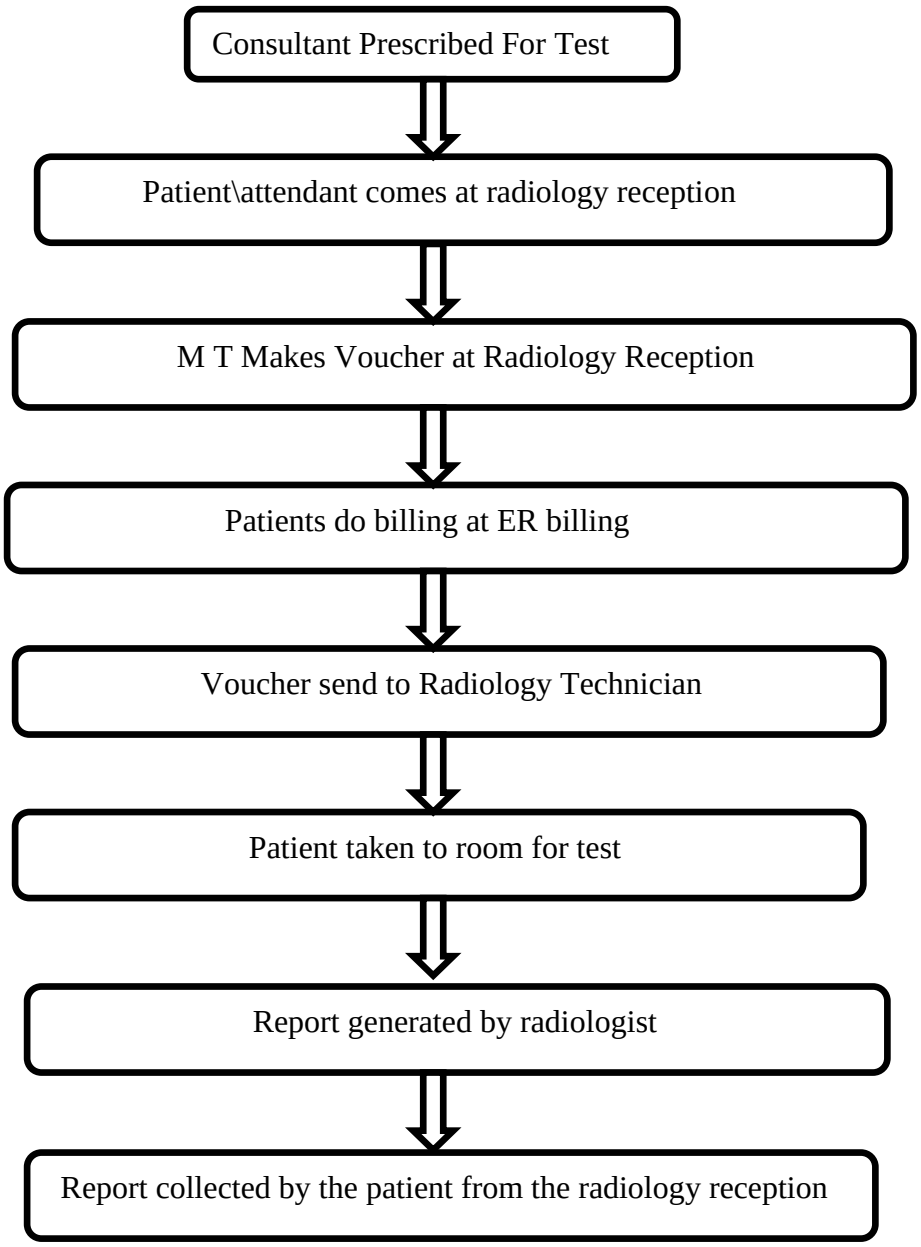
- **X-Ray :**

Radiographs, most often called x-rays, produce shadow-like images of bones and certain organs and tissues. X-rays are very good at finding bone problems. X-ray is used to create images of Lumber Spine, Chest, Pelvic, and Cervical Spine. X-ray can also detect OPG, Hysterosalpingogram (HSG), and Berium Swallow etc.

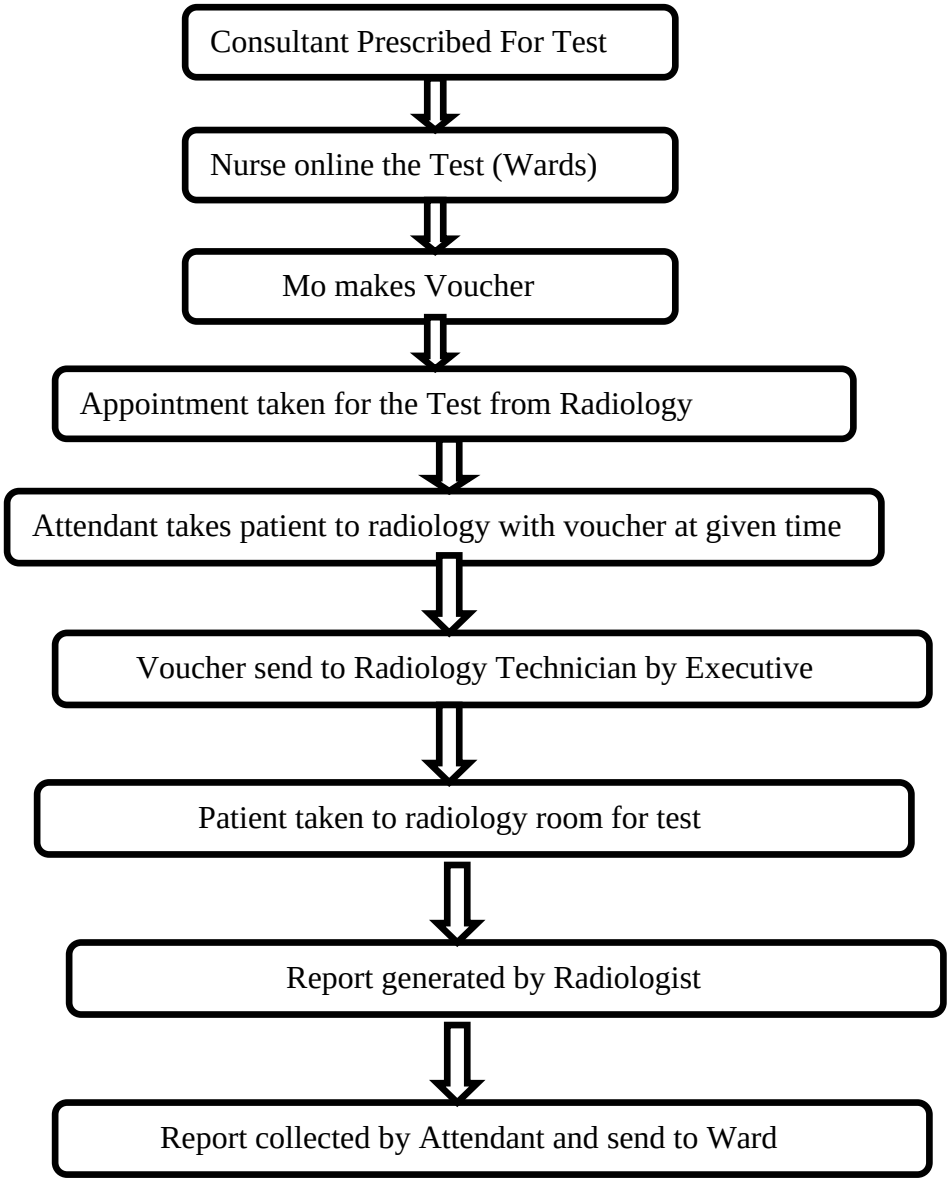
Number of Radiology Equipment in Hospital

USG – 2
X-Ray – 4
OPG – 1
Mammography – 1
MRI – 1
CT Scan - 1

PROCESS FLOW OF OP PATIENTS IN RADIOLOGY



PROCESS FLOW OF IP PATIENTS IN RADIOLOGY



DATA ANALYSIS

Data is analyzed separately for-

- CT Scan
- MRI
- USG
- X-Ray

Data analysis is done in 2 parts-

- TAT from Request time to Reporting
- Waiting time from Request Time to IN Time

Ideal TAT from Request time to Reporting (As per Hospital Policy)

Type Of Test	**TIME (hrs)**
CT Scan	04:00
MRI	04:00
USG	03:00
X-Ray	03:00
Average	**03:30**

Actual TAT from Request time to Reporting

Type Of Test	**TIME (hrs)**
CT Scan	04:25
MRI	04:49
USG	03:38
X-Ray	03:10
Average	**04:27**

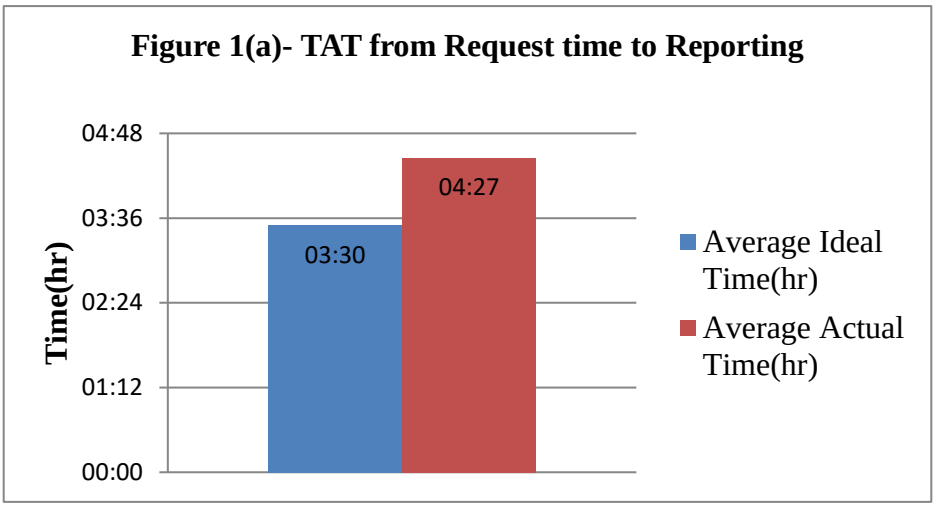
Ideal Waiting Time from Request Time to IN Time (As per Hospital Policy) – 00:30min

Actual Waiting Time – 0:45min

Type Of Test	**TIME (min)**
CT Scan	00:46
MRI	00:52
USG	00:45
X-Ray	00:34
Average	**00:45**

Table 1(a) - TAT from Request time to Reporting

Average Ideal Time(hr)	Average Actual Time(hr)
03:30	**04:27**

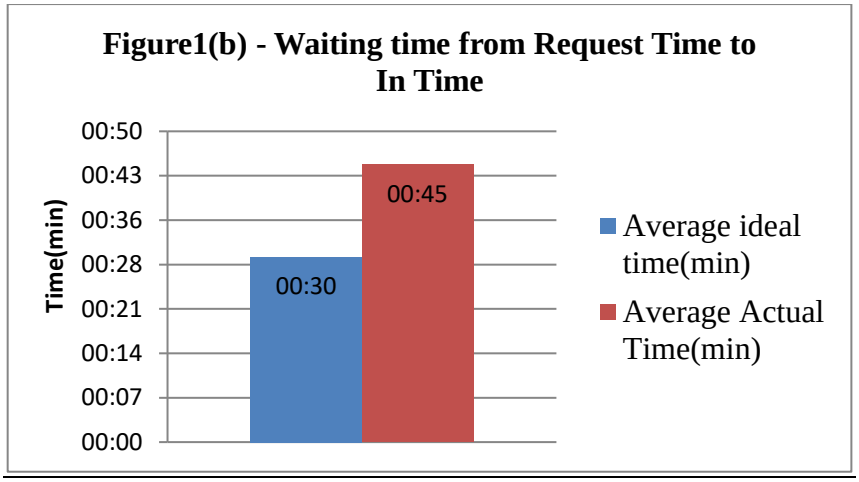


Interpretation

- As shown in Graph as per Hospital policy Average Ideal TAT from Request Time to Reporting is 03:30hr and Actual TAT comes to be 04:27.
- There is a difference of 00:57min between Ideal TAT and Actual TAT.

Table 1(b) - Waiting time from Request Time to In Time

Average Ideal Time(min)	Average Actual Time(Min)
00:30	**00:45**

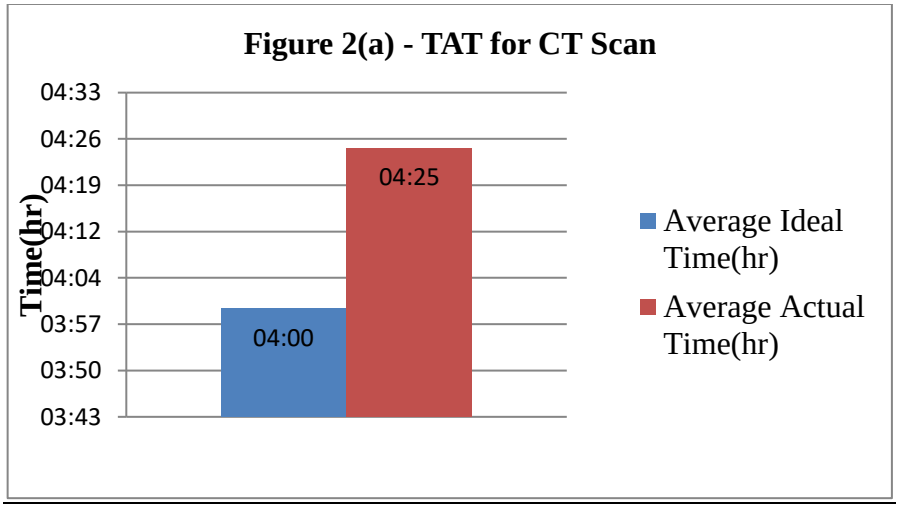


Interpretation

- As shown in Graph Ideal waiting time from Request time to In Time(as per hospital policy) is 00:30min but Actual Waiting time is 00:45min.
- There is a Difference of 00:15min between Ideal and Actual Waiting Time.

Table 2(a) - TAT for CT scan

Average Ideal Time(hr)	Average Actual Time(hr)
04:00	**4:25**

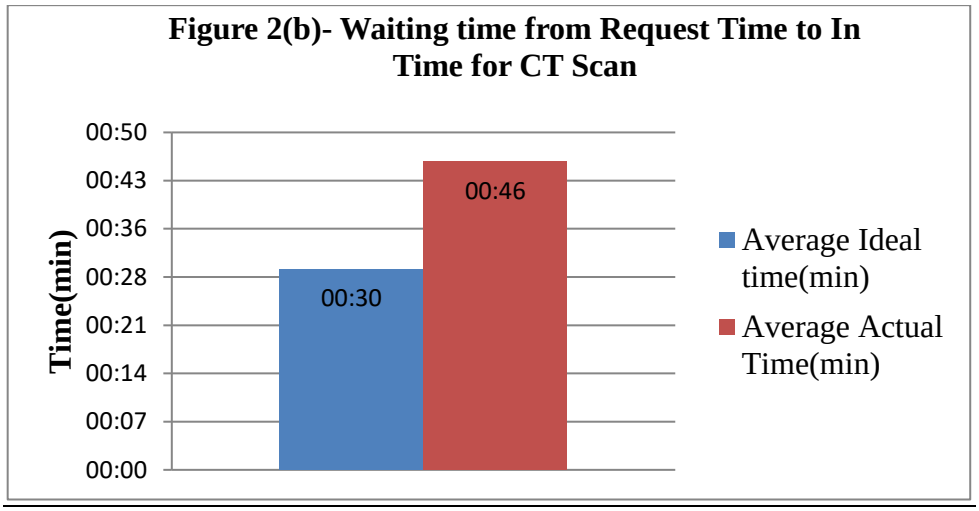


Interpretation

- As shown in Graph as per Hospital policy Average Ideal TAT from Request Time to Reporting for CT scan is 04:00hr and Actual TAT comes to be 04:25.
- Difference between Ideal and Actual TAT for CT scan is 00:25min.

Table 2(b) - Waiting time for CT Scan

Average Ideal Time(min)	Average Actual Time(Min)
00:30	**00:46**

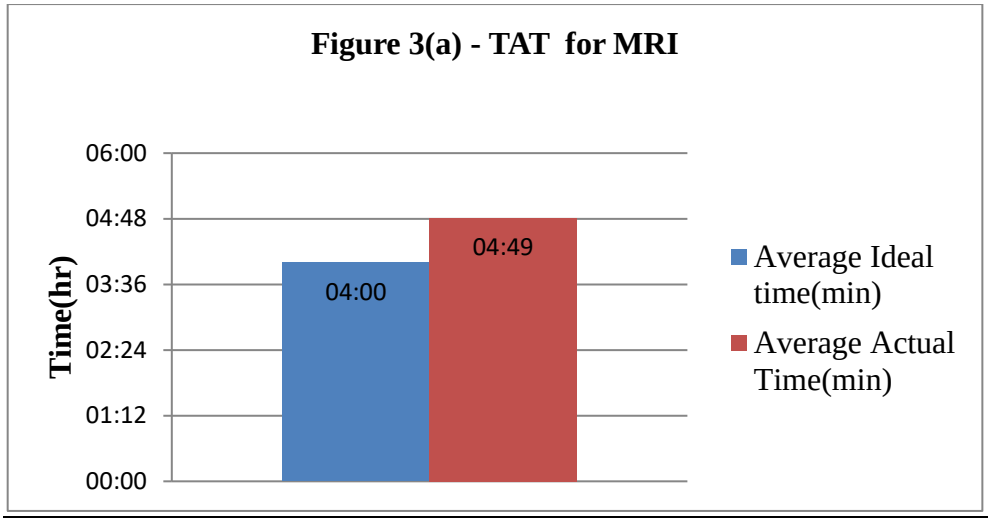


Interpretation

- As shown in Graph Ideal waiting time from Request time to In Time for CT scan(as per hospital policy) is 00:30min but Actual Waiting time is 00:46min.
- There is a Difference of 00:16min between Ideal and Actual Waiting Time.

Table 3(a) - TAT for MRI

Average Ideal Time(hr)	Average Actual Time(hr)
04:00	**04:49**

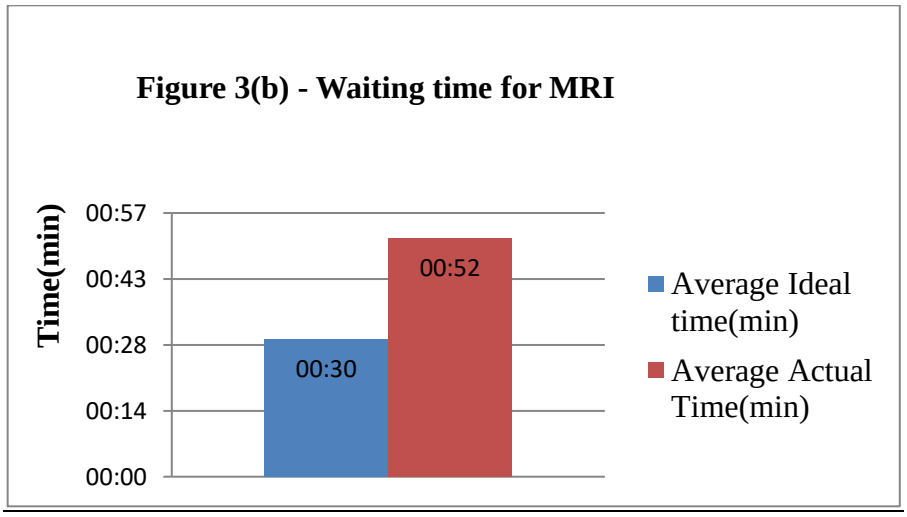


Interpretation

- As per Hospital Policy Ideal TAT from Request Time to Reporting for MRI is 04:00hr and Actual Turnaround time for MRI comes to be 4:49hr.
- 00:49min is Diffence between Ideal TAT and Actual TAT for MRI

Table 3(b) - Waiting time for MRI

Average Ideal Time(min)	Average Actual Time(Min)
00:30	**00:52**

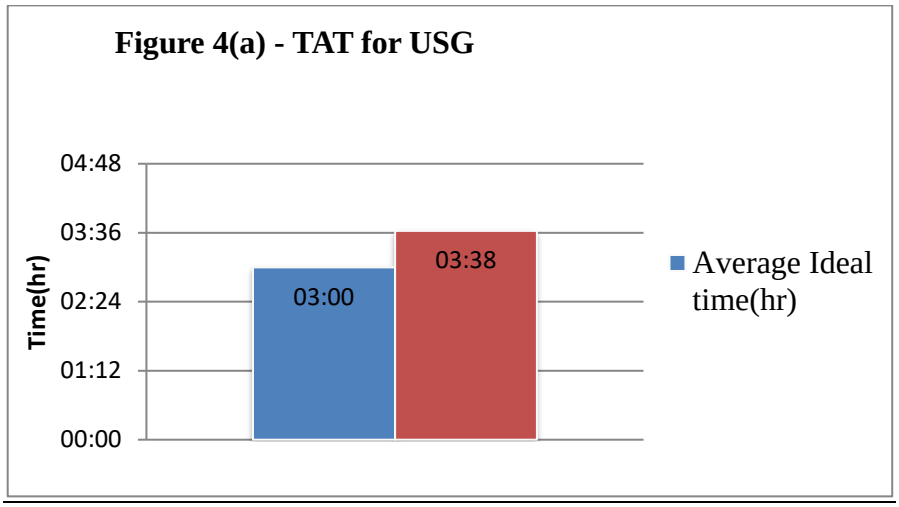


Interpretation

- As shown in Graph Ideal waiting time from Request time to In Time for MRI(as per hospital policy) is 00:30min but Actual Waiting time is 00:52min.
- There is a Difference of 00:22min between Ideal and Actual Waiting Time

Table 4(a) - TAT for USG

Average Ideal Time(hr)	Average Actual Time(hr)
03:00	**03:38**

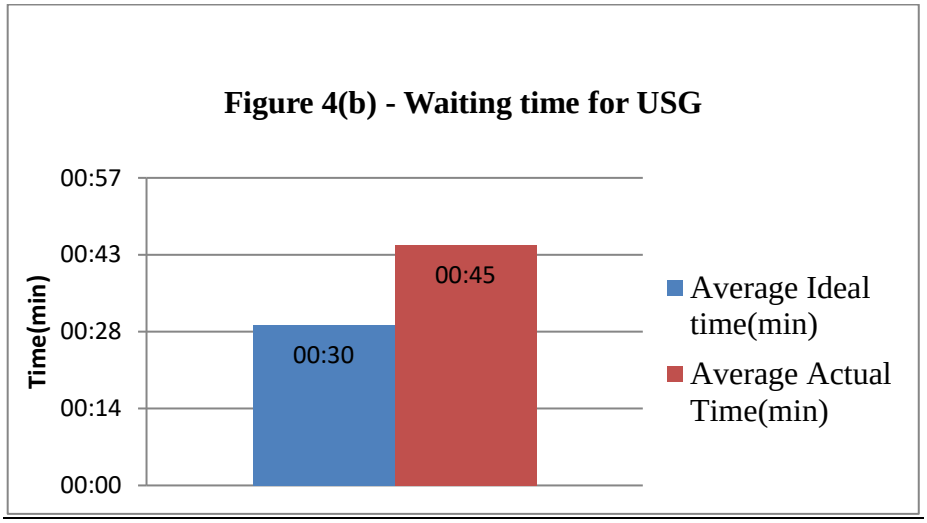


Interpretation

- As shown in Graph as per Hospital policy Average Ideal TAT from Request Time to Reporting for USG is 03:00hr and Actual TAT comes to be 03:38hr.
- Difference between Ideal and Actual TAT for USG is 00:38min.

Table 4(b) - Waiting time for USG

Average Ideal Time(min)	Average Actual Time(Min)
00:30	**00:45**

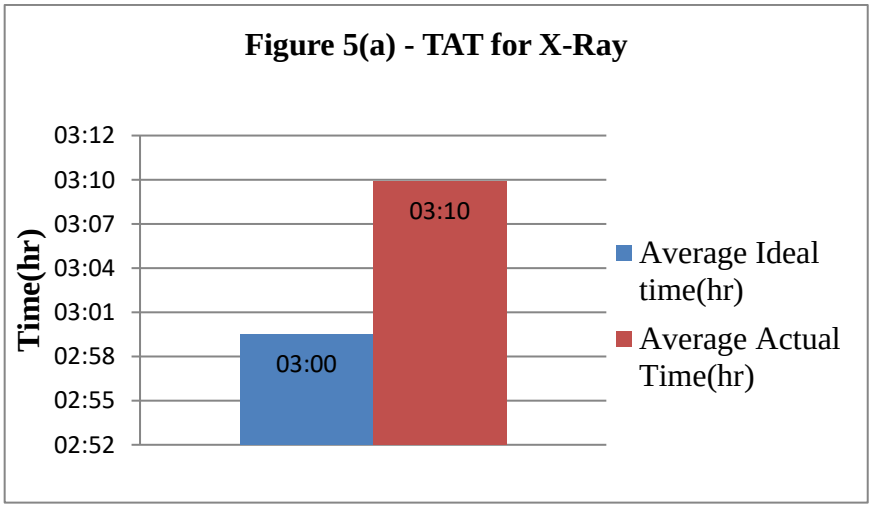


Interpretation

- As shown in Graph Ideal waiting time from Request time to In Time for USG(as per hospital policy) is 00:30min but Actual Waiting time is 00:45min.
- There is a Difference of 00:15min between Ideal and Actual Waiting Time.

Table 5(a) - TAT for X-Ray

Average Ideal Time(hr)	Average Actual Time(hr)
03:00	**03:04**



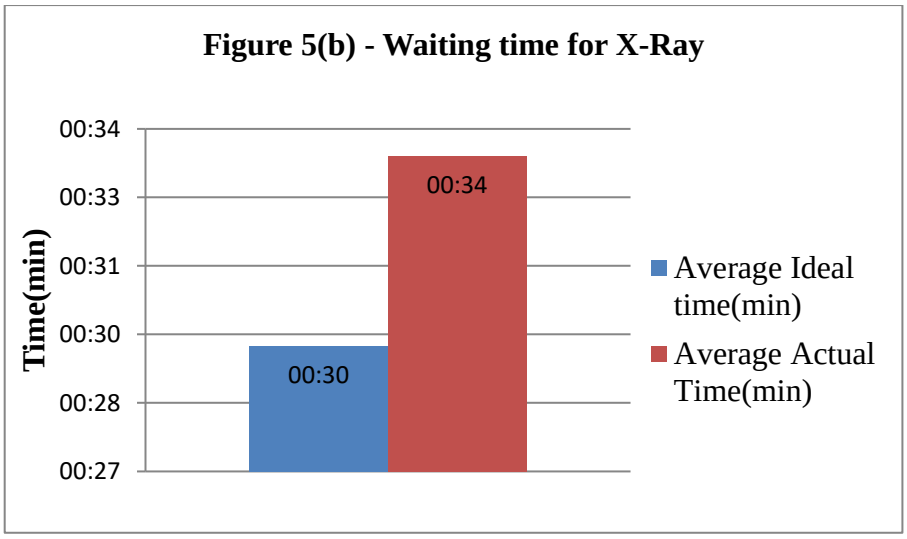
Interpretation

- As shown in Graph as per Hospital policy Average Ideal TAT from Request Time to Reporting for X-Ray is 03:00hr and Actual TAT comes to be 03:10.
- There is a difference of 00:10min between Ideal TAT and Actual TAT.

Table 5(b) - Waiting time from Request Time to In Time for X-Ray

Average Ideal Time(min)	Average Actual Time(Min)
00:30	**00:34**

Figure 5(b) - Waiting time for X-Ray



Interpretation

- As shown in Graph Ideal waiting time from Request time to In Time for X-Ray(as per hospital policy) is 00:30min but Actual Waiting time is 00:34min.
- There is a Difference of 00:04min between Ideal and Actual Waiting Time.

DISCUSSION

In this study Turn around Time of Radiology was assessed. A sample size of 200 (IPD and OPD) patients was observed from request time to report generation.
By showing comparison of Ideal time and Actual Time Data analysis is done using two parameters i.e.-

- TAT from Request time to Reporting
- Waiting time from Request Time to In Time

- Maximum TAT from request time to Reporting is of MRI i.e. **04:49hr** but defined TAT of MRI is **04:00hr** so a gap of **00:49min** is coming up.
- Maximum Waiting Time from Request time to IN time is also for MRI i.e. **00:52min**, as per hospital policy it should be **00:30min**.

In MRI procedure time is long and there is average 15 patients per day so due to outflow of patients and long procedure time TAT and waiting time is maximum for MRI

- In X-Ray there is a difference of only **00:10min** between Defined Time and Actual Time of TAT from request time to Reporting.
- For X-Ray Defined Waiting time from Request time to IN Time is **00:30min** and Actual Waiting time observed is **00:34min**.

In X-Ray TAT and Waiting Time is approximately equivalent to defined Time of Hospital.
As there are more TKR and THR patients so before the surgery X-Ray is to be done so to make available of report before surgery X-ray is done within defined time period.

Hospital administration has to pay serious attention to reduce waiting time and TAT of MRI.

REASONS FOR LONG WAITING TIME:

In morning there is outflow of Health checkups Patients which leads to increase waiting of OP and IP Patients

BLADDER NOT FULL:

No proper instruction given to patient about empty bladder due to lack of information patient has recently pass the urine before coming to the sonography procedure. Sometime Patient can't hold the urine for a long time and due to that he/she has pass the urine before his/her turn

SURGERY PATIENTS:

Because Priority is given to surgical patient so other has to wait for their procedure

EMERGENCY PATIENTS:

As priority is given to the emergency patient it delays all the procedure of other patients.

PATIENT IS NOT AVAILABLE:

Sometime patient is not available on the given appointment time due to which daily appointment schedule gets upset

UNAVAILABILITY OF RADIOLOGIST:

Radiologist is busy in preparing the report of the patient so that patient has to wait for the procedure to be done.

PREVIOUS PATIENT IS FOR DOPPLER:

As Doppler takes minimum 45 minutes it delays all the patients who are for USG procedure as radiologist is busy with the Doppler.

WENT FOR ANOTHER TEST:

As for health checkup patient the sequence of test is not scheduled so the patient went for another test and when patent is called, he is not available for the respective test.

UNAVAILABILITY OF S.CREATININ REPORT:

Some procedure like CT scan with contrast, CT angiography etc. which required the s.creatinin report prior to examination and has to wait for the test report.

UNAVAILABILITY OF ANAESTHETIST

Some procedures like CT scan with contrast, CT angiography, MRI with contrast done only in the presence of anaesthetist and procedure can't be done in radiologist absence so has to wait for the anaesthetist.

REASONS FOR LONG REPORTING TIME

Unavailability of Radiologist

Sometime Radiologist is busy in some radiological procedure leads to delay in reporting.

Complicated case:

In some complicated cases radiologist need reference of other Radiologist has to inform to patient's physician for further clarification which takes time to provide report timely.

Unavailability of Patient Film

In some cases after the procedure film is given to the OP and IP Patients without report as required by the Consultant which leads to delay in reporting.

Unavailability of Patient File

In some cases Radiologist needs to compare history of the patient and due to unavailability of Patient file causes increased reporting time.

Compare Test

In some cases Radiologist needs to compare with other test so have to wait for report of Test.

Recommendation

- Token system or **FIFO** (First In First Out) method should be adopted
- If possible then all the Doppler should be done in specified time not overlapping simple USG.
- As compared to the outflow of patients number of staff is less so recruitment of more Radiologist and Technicians should be done.
- If Patient file and Film is send to the consultant should be return in 1hr to the Radiology for Report writing.
- Pneumatic shaft can be used to send reports to respective Wards.
- There should be a fixed timing in which radiologist do only report writing no procedure is to be done except emergency.
- If in any case radiologist needs to compare with other test of patient then priority to such patient should be given.
- Training of staff in the radiology specially stressing on instruction to patient and appointment scheduling by Executive.

CONCLUSION

The ultimate work product of a radiology department is a finalized radiology report.
In shalby Hospital as compared to test done daily number of radiology staff is less which causes more TAT and long waiting period. Radiology Department of Shalby Hospital needs to be improved required more radiology staff and encourage the technical staff to follow the standard operating procedure and perform the test with minimum time wastage in benchmark time for particular test so that procedure can be done in defined Time as its effect on the revenue and opportunity loss. Because due to more waiting it creates costumer dissatisfaction which may lead to decrease in patient flow

LIMITATION OF THE STUDY

- Study period is small; more sample size can be taken.
- Can track the patient of only between duty hours that are 9.30 am to 6.00 pm.
- Due to Language barrier faced difficulties in communication.

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ANNEXURE

CHECKLIST

CT scan

Sr. No.	UHID	Request time (am/pm)	WAITING (min)	In Time	Out Time	PROCEDURE (min)	Reporting Time	TAT
1	7054469	9:00	0:10	9:10	9:20	**0:10**	10:00	1:00
2	7054420	12:30	0:01	12:31	12:38	0:07	1:58	1:28
3	7054399	16:33	0:02	16:35	16:55	0:25	17:30	0:58
4	7054445	13:10	0:05	13:15	13:22	0:07	16:40	4:30
5	7054468	13:30	0:02	13:32	13:50	0:18	12:30	23:00
6	7054420	12:20	0:20	12:40	12:47	0:07	13:58	1:38
7	7054493	16:05	0:05	16:10	16:15	0:05	18:35	2:30
8	7054505	12:10	0:07	12:23	12:40	0:17	19:10	7:00
9	7054564	16:45	0:25	17:10	17:27	0:17	18:45	2:00
10	7054496	11:30	0:25	11:55	12:05	0:10	14:27	2:57
11	7054306	12:03	0:02	12:05	12:21	0:16	18:50	6:47
12	7054523	13:55	0:15	14:10	14:17	0:07	17:40	3:35
13	7005159	11:00	0:25	11:25	11:45	0:20	12:10	1:10
14	ER	11:30	0:32	12:02	12:10	0:08	14:35	3:05
15	7054246	12:00	0:11	12:11	12:25	0:16	17:30	5:30
16	7054580	12:15	0:12	12:27	12:37	0:10	16:45	4:45
17	7054589	11:25	0:30	13:50	14:00	0:10	15:30	2:55
18	7054642	16:00	0:40	16:40	16:46	0:06	17:52	1:52
19	7054621	10:00	0:25	10:25	10:34	0:09	10:47(CD)	0:47
20	189209	13:40	0:20	14:00	14:05	0:05	18:15	4:35
21	189338	14:10	0:20	14:30	14:35	0:05	15:30	2:20
22	189543	15:00	0:40	15:40	15:46	0:06	16:23	1:23
23	189736	16:55	0:45	17:40	17:46	0:06	18:30	1:35
24	170220	16:50	0:20	17:10	17:15	0:05	17:24(CD)	0:34
25	187374	11:40	0:08	11:48	11:54	0:07	15:40	4:00
26	189112	17:55	0:30	18:25	18:45	0:20	17:45	23:50
27	174882	13:30	0:30	14:00	14:08	0:08	14:31	1:01
28	84206	15:25	0:20	15:45	15:55	0:10	16:05	0:40
29	189533	16:05	0:25	16:30	16:50	0:20	18:35	2:30
30	184195	17:00	0:25	17:25	17:35	0:10	18:04	1:04
31	ER	18:45	0:40	19:25	19:37	0:12	11:45	11:00
32	189457	10:00	0:35	10:35	10:50	0:20	12:29	2:29
33	169981	9:30	0:55	10:25	10:35	0:10	16:15	6:45
34	189518	16:30	3:00	19:30	19:40	0:10	18:20	1:50
35	189533	18:00	0:35	18:35	18:44	0:09	18:35	0:35

36	80312	18:30	0:15	18:45	18:57	0:12	19:15(CD)	0:45
37	189768	9:00	1:00	10:00	10:10	0:10	11:13	2:13
38	131889	11:10	0:20	11:30	11:39	0:09	12:45	1:35
39	147684	12:20	0:10	12:30	12:37	0:07	16:31	3:51
40	189794	14:30	0:30	15:00	15:16	0:16	16:41	2:11
41	110717	11:10	0:40	11:33	11:45	0:17	16:42	4:32
42	180083	11:45	0:05	11:50	11:58	0:08	17:15	5:00
43	189914	14:00	1:00	15:00	15:15	0:15	16:05	2:05
44	7054652	12:30	0:22	12:52	13:00	0:08	14:30	2:00
45	705482	10:30	0:10	10:40	10:47	0:07	16:30	6:00
46	7054623	15:10	0:10	15:20	15:32	0:12	16:34	1:24
47	7054513	13:30	0:35	14:05	14:10	0:05	17:30	4:00
48	189746	9:10	1:55	10:55	11:10	0:15	15:15	6:05
49	178647	14:10	0:30	14:40	14:52	0:12	16:10	2:00
50	107328	16:30	0:20	16:50	16:57	0:07	18:00	1:30
Average			**0:46**			**0:12**		**4:25**

MRI

Sr. No.	UHID	Request time (am/pm)	WAITING (min)	In Time	Out Time	PROCEDURE (min)	Reporting Time	TAT
1	7054429	10:00	0:15	10:15	11:15	1:00	14:50	4:50
2	7054453	13:10	0:10	13:40	14:10	0:30	17:45	5:35
3	7054621	10:40	0:25	12:05	12:22	0:17	16:03	5:37
4	7054586	13:45	0:05	13:50	14:05	0:13	17:17	3:32
5	7054601	15:30	0:10	15:40	16:02	0:22	18:30	3:00
6	7054641	18:00	0:45	18:45	19:05	0:20	19:30	1:30
7	7054330	11:09	0:06	11:15	11:30	0:15	11:35(CD	0:26
8	7054571	12:50	0:15	13:05	13:21	0:16	14:14	2:04
9	7054556	14:00	0:03	14:03	14:17	0:14	15:58	1:58
10	7054500	19:12	0:04	19:16	19:27	0:08	11:15	11:03
11	7054558	19:07	0:17	19:20	19:44	0:22	12:33	12:26
12	ER	11:00	0:02	11:02	11:20	0:18	11:58	0:58
13	7054654	13:30	0:45	14:15	14:32	0:17	15:36	2:06
14	7054390	12:50	0:10	13:00	13:15	0:15	18:55	6:05
15	7054517	18:55	0:05	19:00	19:20	0:20	12:27	7:32
16	189470	10:45	0:10	10:55	11:20	0:25	11:45	1:00
17	187421	11:03	0:27	11:25	11:36	0:11	12:43	1:40

18	189486	12:15	0:10	13:25	13:50	0:30	15:13	3:00
19	189468	11:50	0:20	12:10	12:50	0:40	14:55	3:05
20	189499	13:00	0:55	13:55	14:15	0:20	15:55	2:55
21	187167	16:25	0:05	16:30	16:55	0:25	18:51	2:31
22	189313	11:05	0:15	11:20	11:50	0:30	17:30	6:35
23	189311	11:30	0:20	11:50	12:10	0:20	15:15	3:45
24	79617	12:57	0:13	13:10	13:20	0:10	17:45	5:48
25	189373	14:30	0:15	14:45	15:05	0:20	16:20	1:50
26	189379	13:10	0:05	14:15	14:40	0:35	18:01	4:49
27	189337	12:10	0:28	12:38	12:50	0:12	13:07(CD	0:57
28	95944	17:00	0:13	17:13	17:31	0:18	19:14	2:14
29	189422	19:25	0:05	19:30	19:55	0:25	12:02	11:43
30	189678	11:20	0:10	11:30	11:54	0:24	12:10	0:50
31	189681	12:05	0:30	12:35	13:05	0:30	16:20	4:15
32	1012984	12:58	0:08	13:05	13:27	0:22	17:58	5:00
33	189711	13:30	1:00	14:30	14:52	0:22	16:45	3:15
34	107217	14:30	0:30	15:00	15:29	0:29	17:35	3:05
35	189712	15:00	0:35	15:35	16:10	0:35	18:14	3:14
36	1012975	16:00	0:15	16:15	16:40	0:25	18:55	2:55
37	189747	19:05	0:10	19:15	19:40	0:25	10:26	9:21
38	189536	10:15	0:10	10:25	10:45	0:20	11:30	1:15
39	765	8:30	0:40	9:10	9:26	0:16	11:34	3:04
40	189611	12:10	0:10	12:20	13:42	0:22	15:29	3:19
41	189585	13:10	0:10	15:20	15:45	0:25	16:26	3:16
42	182114	13:00	0:48	13:25	13:52	0:28	15:10	2:10
43	189608	15:00	0:48	15:48	16:05	0:18	16:35	1:35
44	182545	14:45	0:15	15:00	15:10	0:10	17:25	2:40
45	189629	16:25	0:06	16:31	16:56	0:25	18:05	1:30
46	188365	11:00	0:05	11:05	11:27	0:22	15:01	4:01
47	189781	11:05	0:30	11:35	11:53	0:23	15:00	3:55
48	186581	12:00	0:30	12:30	12:50	0:20	16:03	4:03
49	186580	12:00	1:00	13:00	13:21	0:21	16:14	4:14
50	189799	12:30	2:00	14:30	15:15	0:45	16:31	4:31
	Average		**0:52**			0:22		**4:49**

USG

Sr. No.	UHID	Request time (am/pm)	WAITING (min)	In Time	Out Time	PROCEDURE (min)	Reporting Time	TAT
1	7054320	12:30	1:20	13:40	13:55	0:15	16:17	4:17
2	7054142	8:50	0:40	9:40	9:55	0:15	13:28	4:38
3	7054509	12:30	0:45	13:15	13:22	0:08	14:33	2:23
4	7054454	14:30	0:15	14:45	14:57	0:12	16:19	1:49
5	7054782	15:30	0:30	16:00	16:15	0:15	16:27	0:58
6	7054262	14:00	0:10	14:10	14:24	0:24	15:00	1:00
7	7054579	11:00	0:10	11:10	11:20	0:10	13:45	2:45
8	7054581	14:30	0:20	15:50	16:08	0:18	17:30	3:00
9	7054621	10:00	1:00	11:00	11:13	0:13	12:47	2:47
10	7054609	13:55	0:05	14:00	14:15	0:15	14:35	0:40
11	189767	9:00	0:45	9:45	9:57	0:13	11:20	2:20
12	155665	8:45	0:40	9:25	9:36	0:21	11:20	2:35
13	189776	8:30	0:30	9:00	9:14	0:14	10:21	1:49
14	157364	9:20	1:10	10:30	10:40	0:10	11:30	2:10
15	189782	10:45	0:25	11:10	11:22	0:12	12:15	1:30
16	189778	10:25	0:25	11:00	11:11	0:11	12:38	2:13
17	189773	11:00	0:45	11:45	12:00	0:15	12:36	1:36
18	189777	8:30	0:30	9:00	9:10	0:10	12:58	4:28
19	154017	9:00	0:05	9:05	9:17	0:12	12:56	3:56
20	189775	11:00	0:20	11:20	11:34	0:14	12:54	1:54
21	189771	9:30	1:08	10:38	10:50	0:18	12:40	3:10
22	189558	9:10	0:50	10:00	10:17	0:17	10:45	1:35
23	189561	9:30	0:42	10:12	10:25	0:13	11:30	2:00
24	167691	8:25	0:05	8:30	8:40	0:10	11:20	2:55
25	189569	10:35	0:25	11:00	11:15	0:15	12:17	1:43
26	189582	11:02	0:43	11:45	11:58	0:13	12:27	1:25
27	189594	11:20	0:25	14:45	15:01	0:16	15:45	4:25
28	189618	13:30	1:30	15:00	15:13	0:13	15:44	2:14
29	151234	13:35	1:20	15:15	15:30	0:15	15:55	2:20
30	189340	14:25	0:35	15:00	15:13	0:13	15:47	1:22
31	189568	10:10	0:20	10:30	10:45	0:15	10:54	0:44
32	189569	10:35	0:28	10:58	11:13	0:15	12:26	1:49
33	189565	10:00	0:22	10:22	10:33	0:11	12:17	2:17
34	189543	11:20	0:10	12:30	12:45	0:15	13:10	1:50
35	65179	9:00	1:00	10:00	10:16	0:16	13:18	4:18
36	189441	8:30	0:17	8:47	9:12	0:15	12:41	4:16
37	122863	8:25	0:35	9:00	9:30	0:30	12:42	5:16

38	183009	9:25	0:30	9:40	9:55	0:20	15:30	5:55
39	189455	10:25	0:25	10:40	10:50	0:10	13:50	3:25
40	51533	11:45	0:45	12:30	12:53	0:23	13:45	2:00
41	189465	11:15	1:00	15:15	15:30	0:15	15:59	3:44
42	160887	9:55	0:15	10:10	10:20	0:10	10:45	0:50
43	60782	9:45	0:15	10:00	10:13	0:13	10:35	0:50
44	158191	8:45	0:55	9:40	9:58	0:17	10:57	2:12
45	156856	8:45	0:55	9:40	9:55	0:12	10:20	1:35
46	189666	9:05	0:45	9:50	10:00	0:10	10:40	1:35
47	157264	9:15	0:35	9:40	9:50	0:20	11:03	1:48
48	189607	8:30	0:50	9:20	9:32	0:12	12:01	3:31
49	48803	10:40	0:30	11:10	11:23	0:13	12:10	0:50
50	189694	12:30	0:07	12:37	12:45	0:07	13:32	1:02
	Average		**0:45**			**0:15**		**3:38**

X-Ray

Sr. No.	**UHID**	**Request time (am/pm)**	**WAITING (min)**	**In Time**	**Out Time**	**PROCEDURE (min)**	**Reporting Time**	**TAT**
1	7054475	10:35	0:36	11:11	11:15	0:04	13:36	1:01
2	7054482	11:20	0:10	12:30	12:35	0:05	12:54	1:34
3	7054481	11:20	1:00	12:20	12:26	0:06	12:53	1:33
4	7054483	11:30	0:56	12:26	12:31	0:05	12:55	1:25
5	7054474	11:45	0:51	12:36	12:42	0:06	16:10	4:25
6	7054479	11:40	0:58	12:38	12:43	0:05	16:28	3:38
7	7054476	11:45	0:57	12:42	12:50	0:07	17:20	5:05
8	7054477	11:40	1:03	12:43	12:49	0:06	16:07	4:27
9	7054072	12:00	0:50	12:50	13:15	0:25	15:30	3:30
10	7054499	10:05	0:51	10:56	11:13	0:17	13:45	3:40
11	7054406	10:25	0:30	10:50	10:56	0:06	12:55	2:30
12	7054262	11:40	0:25	12:05	12:14	0:09	16:50	4:10
13	7054529	10:30	0:36	11:16	11:18	0:02	12:30	2:00
14	7054530	10:15	0:50	11:05	11:09	0:04	13:15	3:00
15	7054523	11:00	1:10	12:10	12:16	0:06	17:05	6:05
16	7054302	11:25	0:33	11:58	12:07	0:09	15:10	4:15
17	189450	9:40	1:03	10:43	10:45	0:02	12:30	2:50
18	189451	9:45	1:05	10:50	10:55	0:05	11:40	1:55
19	180691	10:00	0:25	10:25	10:30	0:05	12:00	2:00
20	189455	10:00	0:21	10:21	10:24	0:03	12:55	2:55
21	189454	10:00	0:40	10:40	10:44	0:04	13:38	3:38

22	124865	10:00	0:16	10:16	10:24	0:08	14:05	4:05
23	189457	10:00	1:00	11:00	11:06	0:06	12:20	2:20
24	ER	10:00	0:20	10:20	10:50	0:30	14:40	4:40
25	189464	10:15	0:08	10:23	10:30	0:07	13:30	3:15
26	189453	11:25	0:49	12:14	12:17	0:03	17:20	5:55
27	124867	10:00	0:32	10:32	10:36	0:04	12:15	2:15
28	189462	10:40	1:00	11:40	11:55	0:15	14:38	4:58
29	163202	11:10	0:10	11:20	11:29	0:09	12:30	1:20
30	182682	11:05	0:30	11:35	11:50	0:20	13:10	2:05
31	170354	11:15	0:17	11:32	11:35	0:03	14:10	2:55
32	189469	11:20	0:11	11:31	11:37	0:06	15:30	4:50
33	47182	10:00	0:05	10:05	10:15	0:10	12:30	2:30
34	189292	9:30	1:05	10:35	10:45	0:10	12:30	3:00
35	189297	10:00	0:35	10:35	10:39	0:04	11:55	1:55
36	189295	10:25	1:20	10:45	10:48	0:03	13:10	2:45
37	189300	10:15	0:35	10:40	10:47	0:07	13:25	2:10
38	189305	10:30	0:20	10:50	10:58	0:08	11:40	1:10
39	189304	10:30	0:15	10:45	10:50	0:05	12:55	2:25
40	189307	10:45	0:05	10:50	10:58	0:08	12:55	2:10
41	25711	10:35	0:25	11:00	11:07	0:07	14:10	3:35
42	185602	10:55	0:13	11:08	11:13	0:05	11:55	1:00
43	189321	10:55	0:12	11:07	11:15	0:08	13:00	2:55
44	189312	11:00	0:20	11:20	11:27	0:07	15:30	4:30
45	189306	10:30	0:43	11:13	11:17	0:04	13:16	2:46
46	189318	11:15	0:15	11:30	11:34	0:04	14:15	3:00
47	186390	11:10	0:35	11:45	11:51	0:06	12:30	1:20
48	169981	11:10	0:10	11:20	11:25	0:05	15:30	4:20
49	187457	11:13	0:05	12:18	12:27	0:09	16:15	5:02
50	189323	9:45	0:35	10:20	10:28	0:08	13:12	3:57
	Average		**0:38**			**0:09**		**3:20**