

Dissertation Title

**“To study Turn Around time of Health Check patients for an
Ultrasound Scan in Radiology Department in Manipal Hospital,
Bangalore”**

A Dissertation Proposal for

Post Graduate Diploma in Health and Hospital Management

By

Dr. Ashish Chaudhary

PG/11/18



**International Institute of Health Management Research
New Delhi**

01 May 2013

**“To study Turn Around time of Health Check patients for an
Ultrasound Scan in Radiology Department in Manipal
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Certificate of Approval

The following dissertation titled "TO STUDY TURN AROUND TIME OF HEALTH CHECK PATIENTS FOR AN ULTRASOUND SCAN IN RADIOLOGY DEPARTMENT IN MANIPAL HOSPITAL" is hereby approved as a certified study in management carried out and presented in a manner satisfactory 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

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1/5/13
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Free.
(DR A. K. KHOKHAR)

Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Ashish Kumar**, a graduate student of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. He is submitting this dissertation titled " **To study the Total Turn Around time of Health Check patients for an ultrasound scan in radiology department in Manipal Hospital**" in partial fulfilment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management**.

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

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New Delhi
Date **1-5-2013.**

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30/3/13.

MHB/HR/Int-103
March 28, 2013

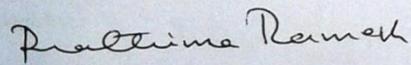
TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr Ashish Kumar** has done his Internship in the department of Operations at Manipal Hospital, Bangalore.

His training period was from 7th January 2013 to 30th March 2013.

We wish him success in his future endeavours.

For Manipal Hospitals, Bangalore
(A Unit of Manipal Health Enterprises Pvt. Ltd)



Prathima Ramesh
Manager - Human Resource

FEEDBACK FORM

Name of the Student: Dr. ASHISH KUMAR.

Dissertation Organisation: NAMI PAL HOSPITAL, BANGALORE.

Area of Dissertation: OPERATIONS.

Attendance: 8/01/13 - 31/3/13. | 5 DAYS ON LEAVE.
18/2/13 - 22/2/13.

Objectives achieved: Observations & recommended for initiating corrective Actions

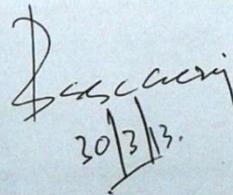
Deliverables: Aggressive approach with a punch is required

Strengths: Dr. Ashish has the ability to get things coordinated effectively and Address areas of gaps.

Suggestions for Improvement: Should be more interactive, proactive, aggressive and zeal to communicate effectively.

Signature of the Officer-in-Charge/Organisation Mentor (Dissertation)

Date: 30/3/13.
Place: BANGALORE.


30/3/13.

Abstract

To study Turn Around time of Health Check patients for an Ultrasound Scan in Radiology Department in Manipal Hospital, Bangalore”

Ultrasound in Radiology Department is very important in terms of revenue and number of footfalls .Increased Waiting Time is one of the important concern for the Radiology Department. Patient has to wait for a longer time than expected time and hence leading to dissatisfaction among patients. Measures should be taken to reduce the waiting time for ultrasound scan.

The study is done during the time period between 15 January to 10 February at Manipal Hospital, Bangalore. A cross-sectional study was undertaken collecting the data from patients at a particular point of time. Quantitative method of research was used. A convenient sample of 300 patients is taken for a good representation of the patients. A convenient sampling study of the Health Check patients coming for the treatment at Manipal Hospital is included in the study. Health Check Patients who underwent for Ultrasound Scan were included in the study. Primary data was collected by observation and from records. Secondary data was collected from HMIS. Data is analyzed using Excel software.

The major findings are:

1. The average waiting time for Health Check patients for Ultrasound Scan is 35 minutes.
2. Average time taken in reaching Radiology department since their arrival in Health Check Department is 1 hour and 11 minutes.
3. Average Time taken in doing Ultrasound Scan is 12 minutes.
4. Out of total patients, nearly 17 % of the patients are reviewed again because bladder is not full and of many other reasons. It is one of the major contributory factors for long waiting time.

Causes of long waiting Time for an ultrasound scan are:

- 1) Lack of Coordination among staff and various department of the hospital
- 2) Lack of Accountability among doctors, nurses and other staff.
- 3) Lack of Patient Education
- 4) Shortage of Manpower in both the department
- 5) Improper utilization of Ultrasound room
- 6) Doctor’s Unavailability is a major concern.They don’t come on proper scheduled time.

7) Problems with the process of Health Check and Radiology Department

Some of the recommendation given for process improvement:

1. Training for staff to increase coordination and communication within the department and with other department.
2. Token system should be installed in radiology department.
3. Instructions regarding Ultrasound scan should be displayed.
4. Accountability should be increased. JDs should be defined.
5. Availability of manpower i.e. both staff and doctors should be insured.
6. There should be proper calling system for patients
7. If possible, there should be appointment system for health check patients.
8. Reports can be send via mail for those who require it via mail.
9. Review of HMIS to decrease unnecessary duplication of work by maintaining log books.
10. There should be a display board in Health Check regarding instructions only for ultrasound.
11. There should be a specific Ultrasound coordinator from Health Check staff who can coordinate and communicate with the Ultrasound coordinator of Radiology Department.

Table of Contents

<u>S. No</u>	<u>Contents</u>	<u>Page Number</u>
	<i>List of Figures</i>	10
	<i>Abbreviations</i>	11
	<i>Acknowledgement</i>	12
1	<i>Organization Profile</i>	13
2	<i>Introduction</i>	16
3	Rationale of the Study	18
4	Objectives of the Study	19
	<i>4.1 General Objective</i>	
	<i>4.2 Specific Objectives</i>	
5	Review of Literature	20
6	Methodology	21
7	Discussion and Study Findings	22
8	Recommendations	30
9	Limitations of the study	31
10	Conclusion	32
11	Case Study on Attrition Of Nurses	33
12	References	34

List of Figures

Description	Page Number
Chart 1 – Diagram showing all the timings	22
Chart 2 – Diagram showing Time from entry in health check department to entry in Radiology Department	23
Chart 3 – Diagram showing time From Entry in Radiology department at Front Desk to Entry in Ultrasound Room	24
Chart 4 – Diagram showing Time taken in Ultrasound Scan	25
Chart 5 – Diagram showing Percentage of Reviewed patients	26
Chart 6 – Fish Bone Diagram	27

ABBREVIATIONS

- 1) TAT : Turn Around time
- 2) MHB : Manipal Hospital Bangalore
- 3) HC : Health Check
- 4) US : Ultrasound
- 5) NABH : National Accreditation Board for Hospital and Healthcare institutions
- 6) USG : Ultrasonography
- 7) OPD : Out Patient Department
- 8) MRI : Magnetic Resonance Imaging
- 9) CT scan : Computerized Tomography Scan
- 10) HMIS : Hospital Management Information System
- 11) JD : Job Description
- 12) PCC : Patient Care Coordinator
- 13) PET : Positron Emission Tomography

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I would also like to thank Mr. Satyanarayan Manager – Radiology and Mrs. Khusbhu Incharge – Health Check for their constant support and guidance during my entire project.

CHAPTER 1
ORGANIZATION PROFILE
MANIPAL HOSPITAL , BANGALORE

Manipal Hospital, Bangalore is a landmark destination for quality and affordable healthcare. The 600 bedded hospital is the leading quaternary care multi super specialty referral centre in Karnataka, with 55 Specialty Services.

The parent company, Manipal group is renowned worldwide for its pioneering work in education and healthcare spanning five decades. Its healthcare division runs 11 hospitals with 4250 beds, 7 Government associated hospitals with 2565 beds, 7 rural health centres and 14 medical colleges.

As an ISO 9001 and an NABH accredited hospital, patients at Manipal Hospital are able to draw on the pool of expertise and skills of well qualified consultants who work as a team to provide the best of care and treatment. In addition to the accessibility of specialist skills, the patients also have the quality assurance that the medical services are peer reviewed and medically audited.

Manipal Hospital has been ranked among the top 5 hospitals in "INDIA'S MOST CARING HOSPITALS" survey. This was an all India survey conducted by the Ministry of Consumer Affairs, Government of India. The hospital was adjudged Best Hospital in Bangalore by The Week magazine. The Consumer Voice awarded Manipal Hospital as the Most Patient Recommended Hospital in India.

As a quaternary care hospital, Manipal Hospital offers a comprehensive range of specialist services combined with the most advanced medical technology, highly qualified team of specialists and world-class nursing care.

Manipal Hospital believes in - Care with a personal touch.

Various departments in the hospital are:

- . Accident & Emergency
- . Anaesthesiology
- . Biochemistry Laboratory
- . Blood Bank
- . Cardiology

- . Cardiothoracic Anaesthesia
- . Cardiothoracic Surgery
- . Critical Care Medicine
- . Dental Medicine
- . Dermatology
- . Diabetes & Endocrinology
- . ENT
- . Fetal Medicine & OBG Ultrasound
- . Medical Gastroenterology
- . General Medicine
- . General Surgery
- . Genetics
- . Geriatrics
- . Haematology Laboratory
- . Histopathology Laboratory
- . In-vitro Fertilization (IVF)
- . Manipal Health Check
- . Maxillofacial Surgery
- . Medical Oncology
- . Microbiology Laboratory
- . Minimal Invasive Surgery
- . Molecular Pathology Laboratory
- . Neonatology
- . Nephrology
- . Neurology
- . Neurosurgery
- . Nuclear Medicine
- . Nutrition & Dietetics
- . Obstetrics & Gynaecology
- . Ophthalmology
- . Orthopaedics
- . Pain Relief Centre
- . Paediatrics
- . Paediatric Cardiology
- . Paediatric Emergency
- . Paediatric Surgery
- . Pharmacy
- . Physical Medicine & Rehabilitation
- . Plastic Surgery
- . Psychiatry
- . Radiation Oncology
- . Radiology & Imaging
- . Respiratory Medicine
- . Rheumatology

- . Sports & Exercise Medicine
- . Stem Cell
- . Surgical Gastroenterology
- . Surgical Oncology
- . Telemedicine
- . Urology
- . Vascular Surgery

Multi Organ Transplants include:

- . Bone Marrow Transplants
- . Liver Transplants
- . Kidney/Renal Transplants

Centres of excellence:

- . Manipal Heart Institute
- . Manipal Institute of Neurological Disorder
- . Manipal Institute of Nephrology and Urology
- . Manipal Comprehensive Cancer Center
- . Manipal Andrology and Reproductive Services
- . Manipal International Institute of Dental Science
- . Manipal Institute of Liver and Digestive Disease
- . Manipal Institute of Sports and Exercise Medicine

CHAPTER 2

INTRODUCTION

Radiology is an important department of the hospital which contributes directly to the patient care and along with pathology provides a vital diagnostic backup to all the specialities which cannot practise effectively without its support. The term radiology incorporates X-ray, USG, CT scan, MRI, DSA, PET etc. Thus scope lies in the diagnosis and treatment of disease through the use of radiography, fluoroscopy and radioisotopes etc.

Diagnostic sonography (ultrasonography) is an ultrasound-based diagnostic imaging technique used for visualizing subcutaneous body structures including tendons, muscles, joints, vessels and internal organs for possible pathology or lesions. Ultrasound imaging, also called ultrasound scanning or sonography, is a method of obtaining pictures or images from inside the human body. It involves sending very high frequency sound waves through the body. These sound waves are reflected off the internal organs. The reflections are then processed by special instruments and powerful computers that subsequently measure and create a visual image of the organs. Ultrasound images are captured in real time and displayed on a television monitor.

Ultrasound can be used for imaging the in the following areas: -

1. Cardiology (Echocardiography)

2. Endocrinology

3. Breast

4. Small Parts

- Testicles

- Eyes

- Thyroid

5. Obstetrics Gynaecology

7. Gastroenterology

8. Musculoskeletal

- Tendons

- Muscles

- Nerves

- Soft tissues

9.Urology

- Bladder
- Urethra
- Kidney

10.Vascular

- Arteries
- Vein
- Intravascular ultrasound

11.Intervention

Health Check Department uses preventive methods to prevent the occurrence of disease or reduce their progression at early stage. There are 4 packages:

1. Basic health check package for men
2. Executive health check package for men
3. Basic health check package for women
4. Executive health check package for women

Ultrasound in Radiology Department is very important in terms of revenue and number of footfalls .Longer Waiting Time is one of the important concerns for the Radiology Department. Patient has to wait for a longer time than expected time and hence leading to dissatisfaction among patients. Measures should be taken to reduce the waiting time for ultrasound scan.

CHAPTER 3

RATIONALE OF THE STUDY

Ultrasound in Radiology Department is very important in terms of revenue and number of footfalls .Longer Waiting Time is one of the important concerns for the Radiology Department. Patient has to wait for a longer time than expected time and hence leading to dissatisfaction among patients. Measures should be taken to reduce the waiting time for ultrasound scan.

Every measure should be taken to reduce the waiting time. Hence total TAT is calculated to know the time spent in activities and to plan accordingly.

CHAPTER 4

REVIEW OF LITERATURE

According to a report titled “Reduction in TAT for stat exams in body imaging” in The university of Texas, the evening shift significantly improves stat TAT. Prioritizing stat exam readout and checkout improves TAT. Use of reminders in the form of text pagers twice a day had a measurable impact. Radiologists not meeting goals are paged with reminders.¹

Hypothesis of the statistical process control techniques can be used to identify extremes in waiting time; root cause analysis can be used to identify specific delay causes; and minimizing the contribution of the root causes will lead to an improvement in system performance.²

Operational and resource utilization challenges led to overcrowding and excessive delays. By doing scene analysis of the impact of operations, scheduling, and resource allocation on patient wait time and resource utilization it was found that the best outcomes were obtained when not one but multiple were implemented simultaneously.³

According to the QI project titled “To reduce the waiting time at ultrasound suite, department of diagnostic radiology”, the net result was : all patients were called within 30 minutes of their appointment times. The waiting area was less crowded, thus alleviating stress level.⁴

CHAPTER 5

GENERAL OBJECTIVE

To study the total turnaround time of Health Check patients for an ultrasound scan in radiology department in Manipal Hospital.

SPECIFIC OBJECTIVES

- To find out the total waiting time.
- To find out the time taken by patients from registration in Health Check to Ultrasound Department.
- To find out the time taken from entrance in radiology department to entry time in Ultrasound room.
- To find out the total time taken in the procedure.
- To find out the causes behind long waiting time and give recommendations according to that.

CHAPTER 6

METHODOLOGY

- **Study Period :**

The study is done during the time period between 15 January to 15 February at Manipal Hospital, Bangalore.

- **Sample size:**

A convenient sample of 300 patients is taken for a good representation of the patients.

- **Study Design:**

A Time series study was undertaken collecting the data from patients at a particular point of time.

- **Sampling Technique:**

A convenient sampling study of the Health Check patients coming for the treatment at Manipal Hospital is included in the study.

- **Research Method:**

Quantitative method was used.

- **Inclusion Criteria:**

Health Check Patients who underwent for Ultrasound Scan.

- **Survey Tool:** By observation

- **Data Collection:**

Primary data was collected by observation and checklist.

Secondary data was collected from HMIS.

- **Data Analysis :**

Data is analyzed using Excel software.

CHAPTER 7

DISCUSSION AND STUDY FINDINGS :

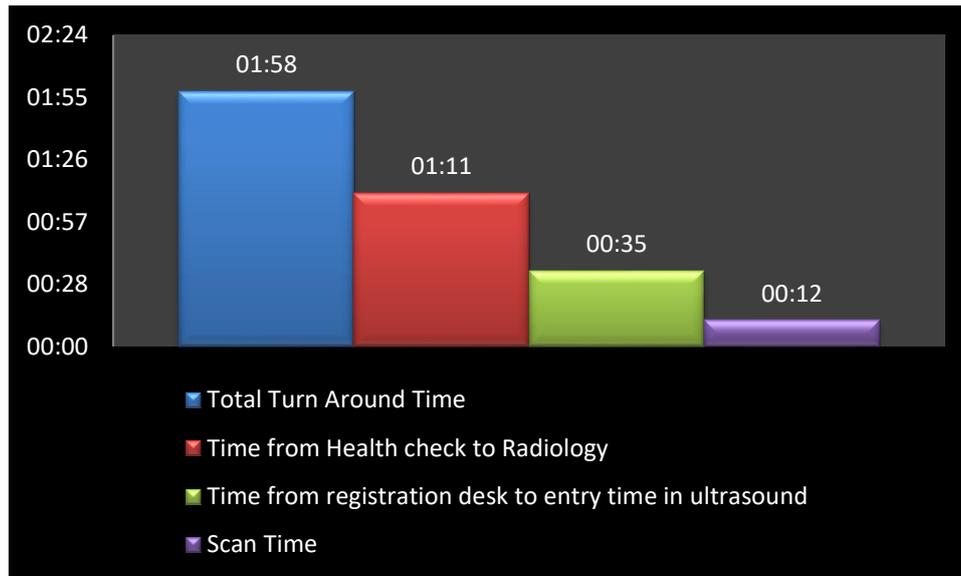


Diagram showing all the timings

Total Turn Around Time is 1 hour and 58 minutes.

Average time taken in reaching Radiology department since their arrival in Health Check Department is 1 hour and 11 minutes.

The average time for Health Check patients from entry in radiology department to entry time in Ultrasound Room is 35 minutes.

Average Time taken in doing Ultrasound Scan is 12 minutes.

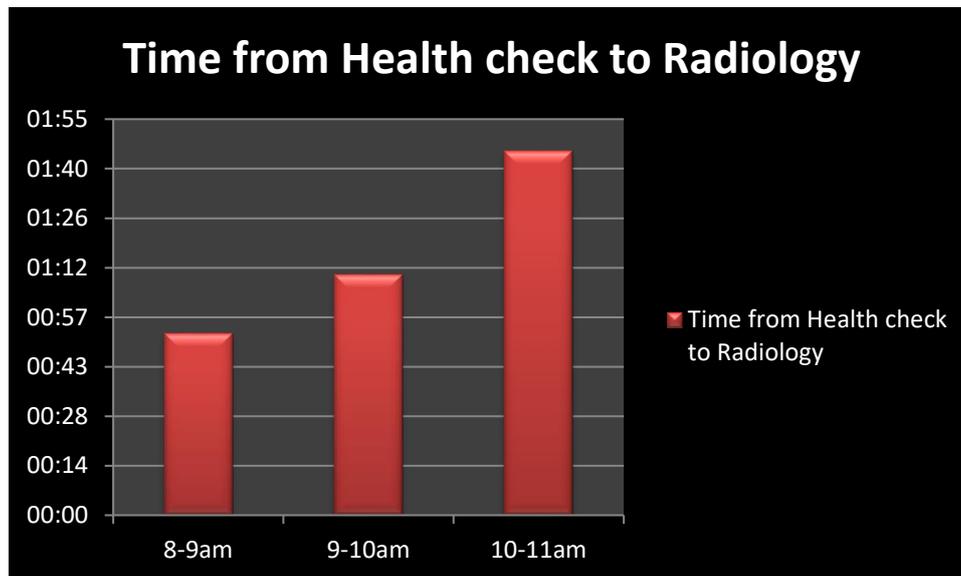


Diagram showing Time from entry in health check department to entry in Radiology Department

During 8am- 9am, the average time taken by patient to reach the radiology department since their arrival in Health Check department is 53 minutes.

During 9am- 10am, the average time taken by patient to reach the radiology department since their arrival in health check department is 1 hour and 10 minutes.

During 10am-11am, the average time taken by patient to reach the radiology department since their arrival in Health Check Department is 1 hour and 46 minutes.

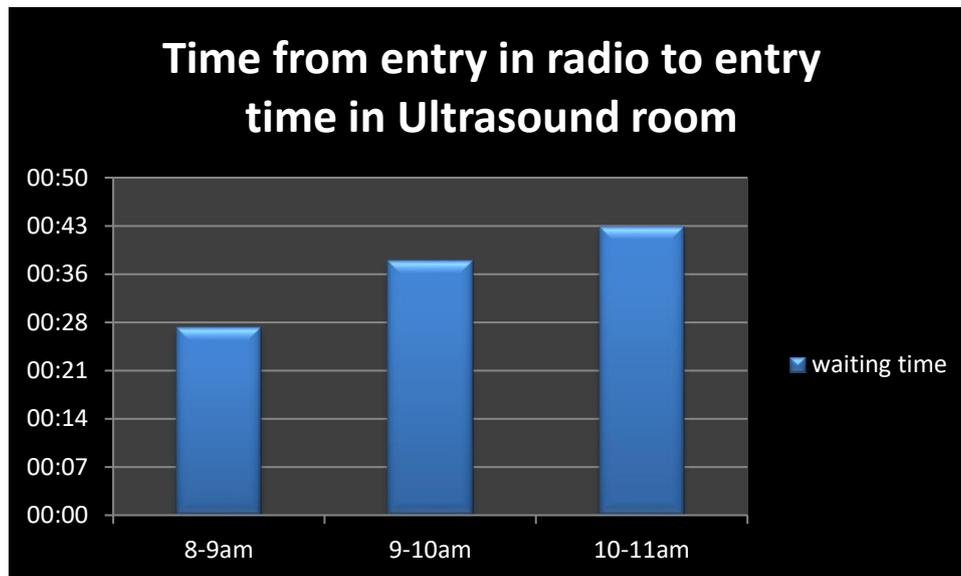


Diagram showing time From Entry in Radiology department at Front Desk to Entry in Ultrasound Room

During 8 am -9 am, the average time is 28 minutes.

During 9 am -10 am, the average time is 38 minutes.

During 10 am -11 am, the average time is 43 minutes.

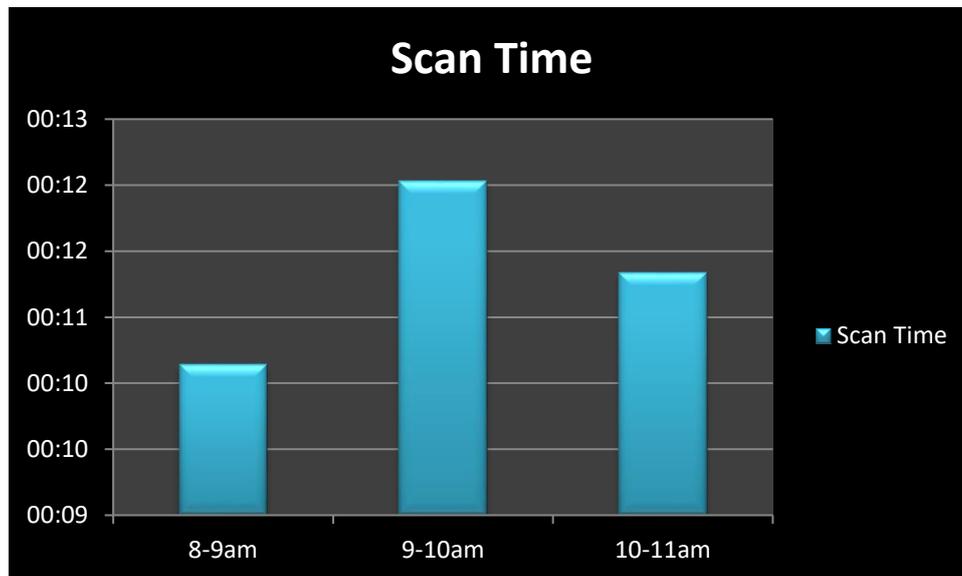


Diagram showing Time taken in Ultrasound Scan

During 8am – 9am, the average time taken in doing ultrasound scan is 10 minutes.

During 9am-10am, the average time taken in doing ultrasound scan is 12 minutes.

During 10am-11am, the average time taken in doing ultrasound scan is 11 minutes.

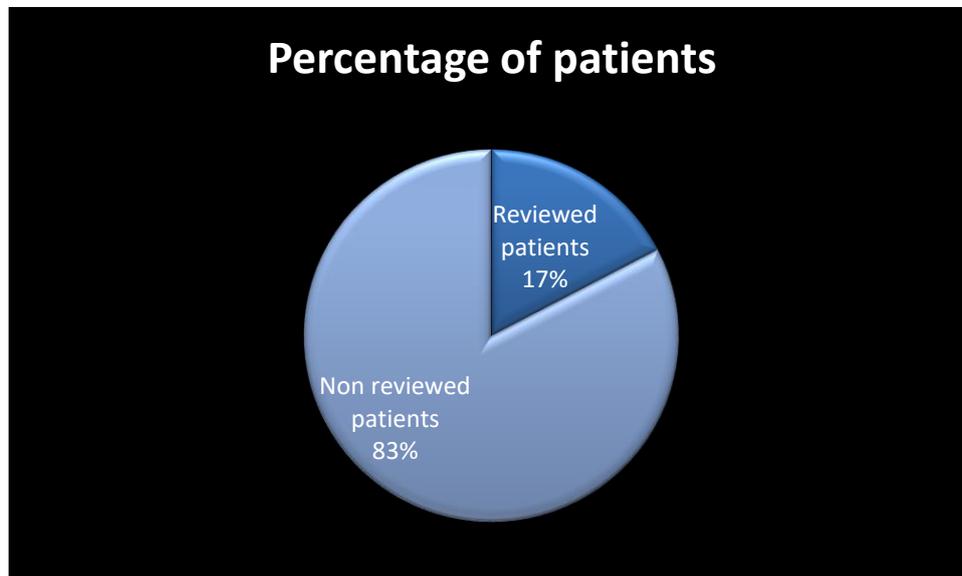
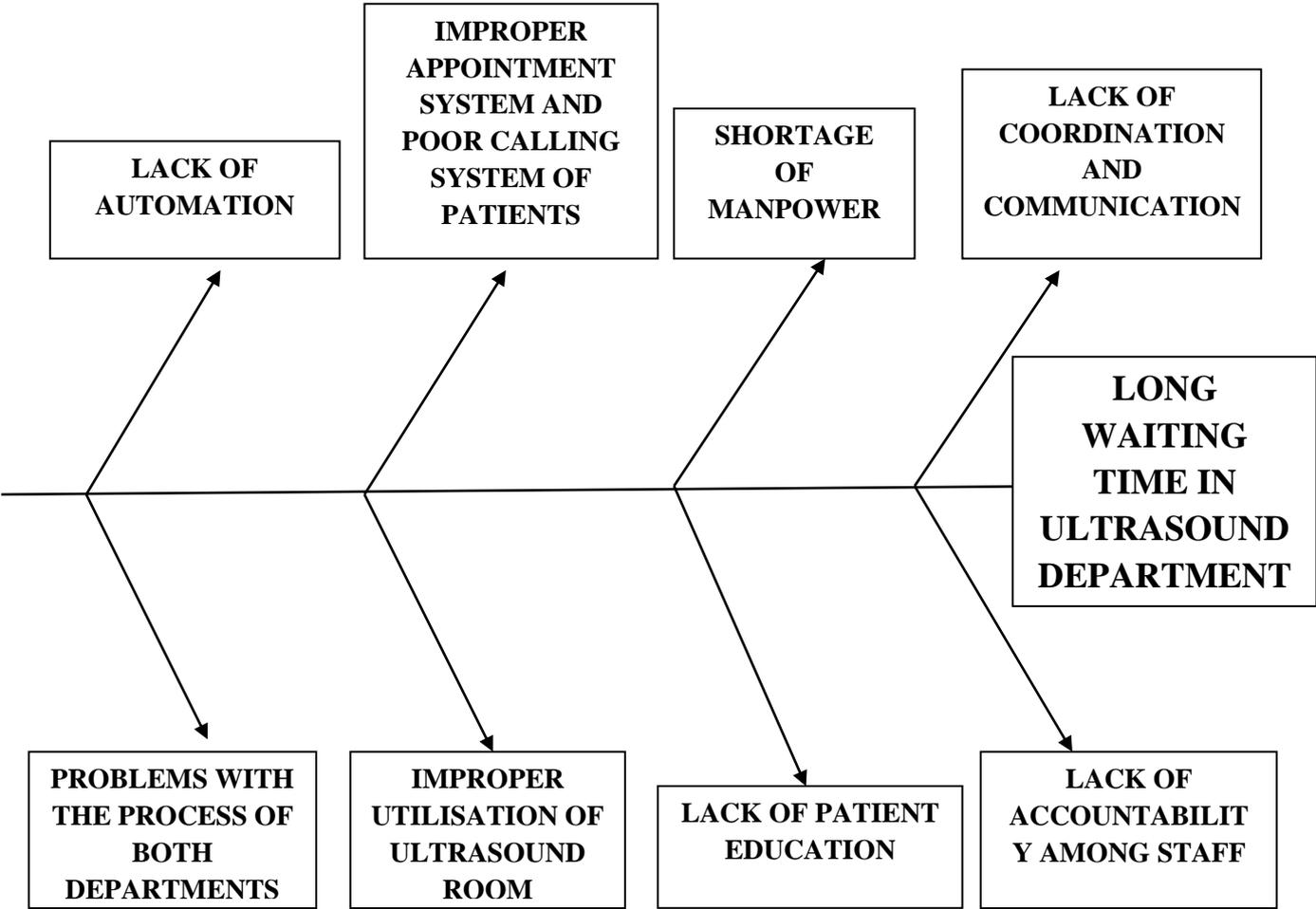


Diagram showing Percentage of Reviewed patients

Out of total patients, nearly 17 % of the patients are reviewed again because bladder is not full and of many other reasons. It is one of the major contributory factors for long waiting time.

ROOT CAUSE ANALYSIS



Fish Bone Diagram

CAUSES OF LONG WAITING TIME

1. Lack of Coordination
2. Lack of Accountability
3. Lack of Patient Education
4. Shortage of Manpower
5. Improper utilization of Ultrasound room
6. Doctor's Unavailability
7. Problems with the process of Health Check
8. Problems with the process of Radiology Department

1. Lack of coordination :

- There is a lack of coordination between Health Check staff and Radiology staff.
- There is no specific coordinator for Ultrasound. Nurses are doing that work at present.
- Coordination of Health check coordinator with the Health check staff is poor. Sometimes they can't maintain the continuity of patients to ultrasound department.
- Sometimes PCC from Health check is on leave or doesn't come for Ultrasound Coordination.

2. Lack of Accountability:

- There is no authorized person in Radiology department who can coordinate with Health Check.
- Sometimes there is a Nurse or PCC who is just busy in shifting papers.
- Because of this, Health Check staff find it very difficult to coordinate.
- Staff in radiology doesn't come on predefined time.

3. Lack of proper patient education:

- It is one of the important factor in increasing the waiting time.
- Most of time patient bladder is not full because of his personal reasons. Lot of time is wasted in doing procedure again and again.
- Every attempt should be made to educate and give proper instructions to patients at right time before the scan.

4. Shortage of manpower:

- There should be an authorized Ultrasound coordinator who can coordinate with Doctors, PCC and Health Check staff.
- Shortage of PCC.
- No registrar/junior doctor in radiology department.

5. Improper utilization of resources:

- Between 8-9 am, the number of cases in ultrasound department is very less. So there is no major concern at that time.
- Between 9-10 am, Doctor's availability is a major concern.
- Only 2 ultrasound room work upto 9:30 am.
- If 4 ultrasound room is used and doctors are available, then we can certainly reduce the waiting time.

6. Problems with the process of department:

- Health Check department is unable to maintain the continuity of patients to radiology department because of other tests going on simultaneously. They have to maintain a balance between the two and ensure the continuity of patients for Ultrasound scan.
- There should be a proper communication channel between ultrasound coordinator and Health check staff.
- Proper instructions to patients regarding Ultrasound Scan.
- In radiology department. Most of the work is manual. There is no automation.e.g. Token system. All the work is manual. Human errors are liable to happen.
- JD's of PCC, nurse and support service staff is not clear.
- No accountable ultrasound Coordinator.
- Waiting time is estimated manually. Patient have to wait more than estimated time and hence leads to dissatisfaction.
- No authorized person for Patient queries related to Ultrasound scan. Patient have to search for them.
- Improper calling system of patient. Patients roam here and there and wait for their turn.
- Time taken in typing of reports is more. It should be decreased.
- Time taken for Verification of reports is more. It should be decreased.
- No display of Instructions for patients regarding Ultrasound scan.
- No defined process for reviewed patients. So other patients have to wait longer than the estimated time given to them

CHAPTER 8

RECOMMENDATIONS

- Training for staff to increase coordination and communication within the department and with other department.
- Token system.
- Instructions regarding Ultrasound scan should be displayed.
- Accountability should be increased. JDs should be defined.
- Availability of manpower i.e. both staff and doctors should be insured.
- There should be proper calling system for patients.
- If possible, there should be appointment system for health check patients.
- Reports can be send via mail for those who require it via mail.
- Review of HMIS to decrease unnecessary duplication of work by maintaining log books.

- **FOR HEALTH CHECK :**

- They should maintain the continuity of the patients.
- They should give stress on patient education.
- They should track down the location of patients.
- Every attempt should be made to reduce the number of reviews for the scan.
- Ultrasound scan should be done as early as possible.
- There should be a display board in Health Check regarding instructions only for ultrasound.
- There should be a specific Ultrasound coordinator from Health Check staff who can coordinate and communicate with the Ultrasound coordinator of Radiology Department.

CHAPTER 9

LIMITATIONS OF THE STUDY

- Some of the patients register late in health check department. So their TAT is high.
- Reviewed patients have longer TAT as compared to non reviewed patients.
- If more samples are taken, then accuracy of the results can be increased.

CHAPTER 10

CONCLUSION

Patients coming for health check are spending a lot of time in ultrasound scan .Every attempt should be made to decrease the total Turnaround time. Waiting time should be as low as possible. We can streamline the process of both (health check and radiology) the departments. Increased coordination and accountability among staff can solve the problem of long waiting time. Patient's coming for ultrasound scan should not wait longer than the estimated time given to them. Patient's education and instructions regarding Ultrasound scan should be done clearly and in a simple language which patient can understand. All these factors will lead to decreased waiting time and overall TAT.

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1. <http://www.rsna.org/uploadedFiles/Reduction%20In%20Turnaround%20Times.pdf>
2. “Decreasing extremities in patient waiting time” by Groome LJ, Meyeaux EJ Jr, (Quality Management Health Care 2010)
3. “Reducing Patient waiting times and improving resource utilization” by Santibanez Chow VS, French J, Puterman ML
4. <http://www.rsna.org/uploadedFiles/To%20Reduce%20The%20Waiting%20Time.pdf>