

**Summer Training at
Max Hospital, New Delhi
(April - June, 2013)**

**TO TURNAROUND TIME FOR RADIOLOGICAL
PROCEDURES (ULTRA SOUND AND X-RAY)**

**By
Anshuman Mittal**

**Under the guidance of
Dr. Sandeep Narula**

**Post Graduate Diploma in Hospital and Health Management
2012-2014**



**Institute of Health Management Research,
Jaipur
2013**

**INSTITUTE OF HEALTH
MANAGEMENT RESEARCH**

1, Prabhu Dayal Marg
Sanganer Airport, JAIPUR - 302 011, INDIA
Tel. : 3924700, 2791431-32
Fax : 91-141-3924738
E-mail : iihmr@iihmr.org
URL : <http://www.iihmr.org>
Gram : HEALTHINST

CERTIFICATE

This is to certify that Dr. Anshuman Mittal, student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from Institute of Health Management and Research, Jaipur has undergone Summer training in MAX Hospital, Shalimar Bagh, New Delhi from April 8th to June 6th 2013.

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

I wish her success in all her future endeavors.



Dr. Sandeep Narula

Faculty and Mentor

IIHMR, Jaipur



Dr. Ashok Kaushik

Dean, Academics and Student affairs

IIHMR, Jaipur

June 6, 2013

TO WHOM IT MAY CONCERN

This is to certify that **Dr. Anshuman Mittal D/o Mr. Subhash Chand Mittal** a student of PGDHM from IHMR, Jaipur has successfully completed summer training from **April 8, 2013 to June 6, 2013** at Max Super Speciality Hospital, Shalimar Bagh, New Delhi.

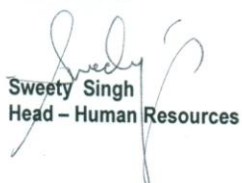
Following projects were undertaken by her:

1. Turn around time for radiological Procedures (Ultra sound and X-ray)
2. Assessment of Safety, Health and Environmental issues across various departments of MSSH.
3. Implementation of 5'S in report dispatch area.
4. Assessment of patient medication in Inpatient department (BCMA- Bar Coded Medication Administration)

During the period of her training with us, she was found punctual, hardworking and inquisitive.

We wish her every success in life.

Your Sincerely


Sweety Singh
Head - Human Resources

Max Healthcare Institute Limited

Regd. Office: Max House, Okhla - III, New Delhi - 110020, Phone: +91 11 41612123, Fax: +91 11 41612155
www.maxhealthcare.in

ACKNOWLEDGMENT

I take this opportunity to express my gratitude to all the persons who have been instrumental in the successful completion of this project

I express my greatest regard to my mentor **Dr. Sandeep Narula** , Associate Professor IHMR JAIPUR for helping and guiding me during my summer training.

I would like to express my deepest gratitude to Sr. Manager Quality, **Mr. Bharat Laroyia** at Max Healthcare, Shalimarbagh, New Delhi for his excellent guidance, patience and providing me great opportunity to work. I would like to extend my sincere thanks to **Dr. Aju Agnothri** (HOD, Blood Bank) & **Dr. Archana Bajaj** (Medical Superintendent) who were always available to guide me during challenging phases of my project .

TABLE OF CONTENTS

1.0 Hospital profile scope and services

1.1 Facility layout and distribution

1.2 Vision and mission model

1.3 Departments

2.0 Introduction

3.0 Rationale of the study

4.0 Objectives

5.0 Review of literature

6.0 Methodology

6.1 Study design

6.2 Study area

6.3 Data collection techniques and tools

7.0 Study Findings

7.1 Call centre

7.2 Security

7.3 Reception/help desk

7.4 Appointment system

7.5 Outpatient department

7.6 Preventive health programme

7.7 Inpatient admission and billing

8.0 Actionable

9.0 References

10.0 Appendix

LIST OF TABLES

Table no. 1: Floor wise distribution of facility

Table no. 2: Bed distribution category wise

Table no. 3: Fully operational bed distribution category wise

LIST OF GRAPHS

- Graph no. 1: Bed strength and area wise distribution
- Graph no. 2: Fully operational floor wise distribution of the facility.
- Graph no. 3: TAT analysis for ultrasound.
- Graph no. 4: Waiting time for ultrasound
- Graph no.5 : TAT analysis for X-ray
- Graph no. 6: Waiting time for X-ray.

ABBREVIATIONS

TAT – Turnaround time

IPD – Inpatient department

OPD – Outpatient department

CPRS – Computerized patient record system

GDA – General duty assistant

HIS – Hospital information system

EWS – Economically weaker section

CT scan- computed tomography

MRI – Magnetic resonance imaging

HOSPITAL PROFILE

Max Super Speciality Hospital, Shalimar Bagh (MSSH) is a multi-speciality hospital, owned and operated by Max Healthcare Institute Limited (MHIL).

Designed by internationally renowned architect Mr. Richard Wood and constructed in conformity with globally accepted standards for hospitals, MSSH covers approximately 2 lakh 98 sq.ft. spread over 12 floors. Max Healthcare now extends its personalised service to the people of Shalimar Bagh. This Super Speciality Hospital caters to the healthcare requirements of North, North-West Delhi & Eastern parts of Haryana and is backed by state-of-the-art medical equipments along with emergency & intensive care infrastructure.

Max Super Speciality Hospital, Shalimar Bagh is a centrally air-conditioned hospital with a total bed capacity of 300 beds. The hospital is designed to provide highest level of professional expertise and world class care in Comprehensive Cardiac Sciences, Minimal Access, Metabolic & Bariatric Surgery, Neurosciences, Orthopaedics & Joint Replacement, Trauma & Critical Care, Urological Services and all Support Specialties.

➤ Scope and Facilities

- OPD
- Emergency
- Trauma & Critical Care
- Inpatient Services
- Preventive Health, Pre-employment health & Pre-insurance health check-ups
- Laboratory and Diagnostics
- Pharmacy
- Support Services

Max Hospital, Shalimar Bagh is built on the strong foundation providing services in aforesaid departments.

All of these departments have separate scope of services & policies related to patient care. These form the basic working guidelines for the hospital which is under the aegis of vision & mission of Max Healthcare.

Out Patient Services

MSSH, Shalimar Bagh is equipped to render complete services for treatment of emergency, acute, routine and follow up care for patients of all age groups. The outpatient services are provided in the following specialities:

1. Aesthetic & Reconstructive Plastic Surgery
2. Minimally Access Metabolic & Bariatric Surgery
3. Cardiology
4. CTVS
5. Dermatology
6. Dentistry
7. Dietetics
8. Endocrinology
9. ENT
10. Gastroenterology
11. General surgery
12. Gastro-Intestinal Surgery
13. Gynae MAS
14. Paediatric Surgery
15. Internal Medicine
16. Mental Health & Behavioural Sciences
17. Neurosciences
18. Nephrology
19. Obstetrics & Gynaecology
20. Ophthalmology
21. Orthopaedics
22. Paediatrics & Neonatology
23. Paediatric Surgery
24. Podiatry
25. Respiratory Medicine
26. Physiotherapy & Rehabilitation
27. Urology
28. Vascular Surgery

29. Preventive Health Programme

Emergency

The Emergency Department specializes in focusing on triaging, diagnosing, providing primary care and treatment of acute illnesses and injuries that require immediate medical attention.

The emergency department also provides the ambulance services for transporting critically ill patients who require transportation. The hospital has internationally trained Physicians in the field of Emergency medicine.

In patient services department

The IPD provides

- the detailed pre-procedure needs, their completion and coordination with the diagnostics to arrive at diagnosis and completion of treatment regimens
- comprehensive care in the preoperative, postoperative and follow up care.
- rehabilitative and nutritional regimen and their scientific amalgamation as per the progressive patient care need.

Preventive Health & Pre- employment medical check- up

Preventive Health Programme is committed to the old adage “prevention is better than cure”.

The preventive health programme comprises of a comprehensive set of tests, which have been specially designed keeping the health needs of people in mind.

The Diagnostic services have state of the art technology, equipment, highest level of environmental controls and fully trained and experienced staff who are dedicated to the care of patients.

Diagnostics

- **Laboratory**
 - Biochemistry
 - Haematology

- Immunology
- Microbiology
- Cytology
- Frozen Section
- Clinical Pathology

- **Radiology & Imaging Services**

- X-Ray
- CT Scan
- Ultrasound
- Mammography
- MRI
- Fluoroscopy

- **Cardiology**

- ECG
- TMT
- Echocardiography
- Stress Echocardiography
- Holter

- **Nuclear Medicine**

- Bone Scan
- Thyroid Scan
- Renal (DTPA/DMSA) Scan
- Stress Thallium
- RBC scan
- Meckal Scan
- HYDA Scan

- **Neurology**

- EEG
- EMG
- NCV

- **Gastroenterology**

- ERCP
- Endoscopy

▪ **Pulmonology**

- Bronchoscopy
- Sleep Study
- PFT

▪ **Urology**

- Urodynamics

▪ **Support Services:**

- Front office
- IP Billing
- Food and Beverages
- Housekeeping
- Medical Records Department
- Engineering
- Biomedical Engineering
- Security
- HR & Training
- Administration
- IT
- LSS
- Commercial
- Accounts
- Marketing

Facility Layout

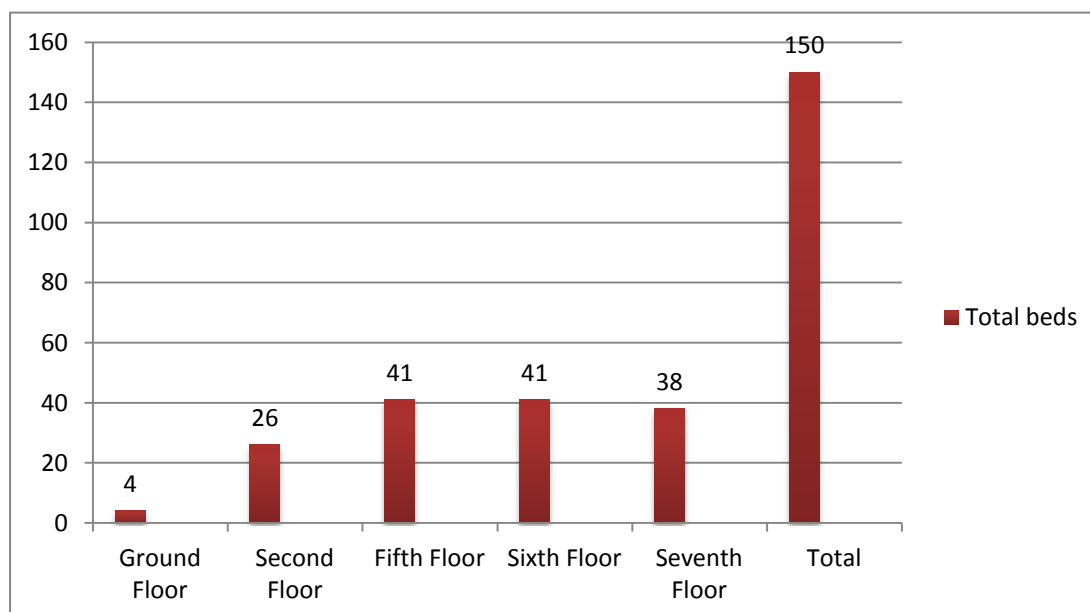
The Floor wise Distribution of MSSH, Shalimar Bagh:

Floor	Patient Care Services
Lower Basement	Engineering Installations (LT Panel, Chillers), Engineering Office, Local Sub Store
Upper Basement	IP Pharmacy, Housekeeping Store ,CSSD, Call Centre, Bio Medical Engineering Office, Security Control Room, Uniform & Linen Room, Staff Change Rooms, Mortuary, Bio Medical Waste Room, IT Server Room, MRD

Ground Floor	OPD/Preventive Health Program, OP Registration, IP Admission & Discharge, MRI, CT, Fluoroscopy,X-ray,Ultrasound,Mammography, Emergency Resuscitation & Observation, Emergency O.T, Nuclear Medicine, CCU, ECG, TMT,ECHO, Holter, EEG, EMG,Phlebotomy, Plaster & Treatment Room, Visitor Cafeteria, OP Pharmacy
First Floor	O.T Complex (6 O.T's), Pre-post O.T, TSSU, O.T Store, Labour Room, Caesarian O.T, Nursery & Pre-post Labour, Ambulatory Care (Day Care Room , Day Care O.T, Endoscopy Suite, Lithotripsy), Cath Lab, Pre-post Cath, CTVS ICU
Second Floor	MICU, SICU, Neuro ICU, PICU, NICU, HDU, Blood Bank, Dialysis Unit, ICU Patient Attendant Waiting Area
Third Floor	Physiotherapy, Lab, Doctors Lounge, Kitchen, Staff Cafeteria
Fourth Floor	Administrative Offices, HDU, IP Rooms
Fifth – Ninth Floor	IP Rooms

Bed Strength and Distribution Area wise

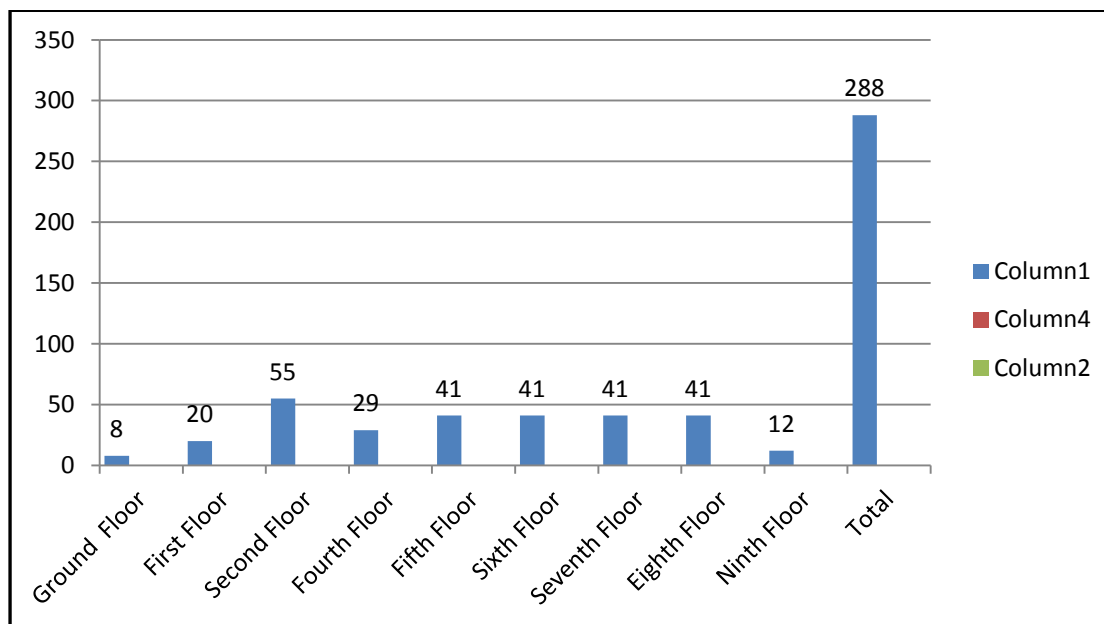
MSSH, Shalimar Bagh has currently 150 operational beds as under:



Bed Distribution Category wise

Category	Ground	Second	Fifth	Sixth	Seventh
Economy Beds	0	0	8	8	8
Single Room	0	0	13	13	10
Double Room	0	0	20	20	20
ACCU	4	0	0	0	0
CTVS ICU	0	4	0	0	0
MICU	0	10	0	0	0
SICU	0	4	0	0	0
PICU	0	4	0	0	0
NICU	0	4	0	0	0
Total	4	26	41	41	38

Hospital will be fully operational with 288 beds as under –



Bed Distribution Category wise

Category	Floor								
	Grnd	1 st	2 nd	4 th	5 th	6 th	7 th h	8 th	9 th
Economy Beds	0	0	0	10	8	8	8	8	0
Double Room	0	0	0	8	20	20	20	20	0
Single Room	0	0	0	2	13	13	13	13	0
Classic deluxe	0	0	0	0	0	0	0	0	8
VIP Suite	0	0	0	0	0	0	0	0	4
HDU	0	0	8	9	0	0	0	0	0

PICU	0	0	8	0	0	0	0	0	0
NICU	0	0	13	0	0	0	0	0	0
SICU	0	0	8	0	0	0	0	0	0
MICU	0	0	10	0	0	0	0	0	0
Neuro ICU	0	0	8	0	0	0	0	0	0
CTVS	0	8	0	0	0	0	0	0	0
CCU	8	0	0	0	0	0	0	0	0
Daycare	0	12	0	0	0	0	0	0	0
<u>Total</u>	8	20	55	29	41	41	41	41	12

The defined services are prominently displayed at various places so that they are easily visible to the patients entering the organization.

- Services not included in the scope of MSSH, Shalimar Bagh are:

- Radiation Oncology
- Bone Densitometry.
- Treatment of major burns patients
- Major Transplants (Liver, Kidney)
- Treatment of Infectious Diseases

Vision – Mission Model

Passion – Build trust

Vision- deliver international class health care with a total service focus, by creating an institution committed to the highest standards of medical and service excellence ,patient care, scientific knowledge ,research and medical education.

Mission –

- Create exceptional standards of medical and service excellence
- Care provider of first choice
- Principal choice for physicians
- Ethical practices
- Create international centre of excellence for select super specialities.
- Safety- patient, customer, staff.

The logo



The cross is the accepted symbol for Healthcare the world over. The hands that you see within it are inspired by Michaelangelo's famous painting on the roof of the Sistine Chapel showing the birth of Adam. In this work, which has endured for centuries, God bestows the gift of life on mankind through his touch, a truly fitting symbol for a group that endeavours to enhance the quality of life through healing and care. The healthcare green that we have finally chosen is fresh, close to nature and symbolic of life. We hope to use this colour to differentiate all our healthcare properties

DEPARTMENTS

Blood bank

Blood bank caters to transfusion need of the patient.

Blood bank is responsible for:

- Collecting blood from blood donors
- Rapid response to urgent requests for blood components
- Checking pre-transfusion samples and requests
- Assessing of immunological compatibility between donor and patient
- Selecting of suitable blood component for each clinical condition
- Safe delivery and handling of blood components

Location – It is located on the 2nd floor.

Layout –The facility has

- Reception and waiting area
- HOD room- where medical examination and selection of donors was done
- Phlebotomy room – where blood was collected from the donors
- Serology- blood grouping and cross matching was done here.
- Component lab – where blood components were separated and stored.
- Sterilization cum washing room
- Store cum records
- Refreshment cum rest room

Central sterile supply department (CSSD)

Central Sterile Supply Department (CSSD) is one of the most important departments of the hospital and is the area of excellence.

It aims at centralising the activities of receiving, cleaning, assembly, sterilisation, storage and distribution of sterilised materials from a central department where sterilisation is done under controlled conditions with adequate managerial and technical supervision at an optimum cost.

It contributes to reduction in hospital infection rate.

Location – It is located in the basement.

Layout – The department was divided into three main areas which were separated by barriers. Space was further divided in the main areas as per the work flow. The flow of activities performed was:

- **Receiving area**- used items from various departments were received here for cleaning and sterilization.
- **Cleaning area** – cleaning of instrument was done manually and with the help of a machine. The instruments were subjected to the cycle of washing, rinsing, ultrasonic cleaning and drying. After that instrument were received in the packing area from the drying machine.
- **Packing area** – here instruments were prepared for sterilization by packing and sealing them.
- **Sterilizing area**- here sterilization of instrument was done. Sterilization was done by two main method
 - Steam sterilization by autoclaves
 - Gas sterilization by ETO (ethylene oxide).
- **Storing area** – here instruments were stored in sterile area before distribution to the various department.
- Distribution counter.

Dialysis room

Dialysis room caters to the dialysis or blood purifications of patients with kidney disorders.

Dialysis department is responsible for:

- Doing dialysis of patients mostly on daycare basis.
- Rapid admissions and mostly same day discharge of the patients.
- Assessing the condition of the patient before the procedure if the patient is fit for dialysis.
- Safe delivery and handling of various dialysis machine components and raw material eg acetate bicarbonate(blood purifier).

Location – It is located on the 2nd floor.

Layout –

- Nursing counter
- Store room
- Doctors room
- Dirty utility room

- Clean utility room
- 9 beds
- 6 dialysis machines which were working
- Isolation room.

Preventive health programme department

Location- It is located on ground floor.

Functions performed by PHP:

- **Appointment fixing-**

- patient fixes the appointment on phone or walks in
- Standard instructions given verbally and PHC kit (Registration form, Questionnaires, urine & stool containers, Instruction sheet) couriered or collected by patient
- PHC Information sheet & track sheet prepared (both on daily basis) to be sent to different departments. Tracking sheet prepared and records maintained.

- **Patient registration** – patient reaches the PHP counter and fills the registration form and invoice is generated

- **Diagnostics and consults**

- Patient sent for Fasting blood investigation to lab / Radiology investigation (ultrasound)
- Lab Technician collects samples
- Patient visits various diagnostic departments as per the Tracking sheet (Radiology, Cardiology and Pathology)
- Nurse records vitals & Patient consults concerned doctor. Review date given(if included in PHC)
- Verify the check-up with the patient against the Tracking sheet. Marks the pending test (if any).

- **Review consults**

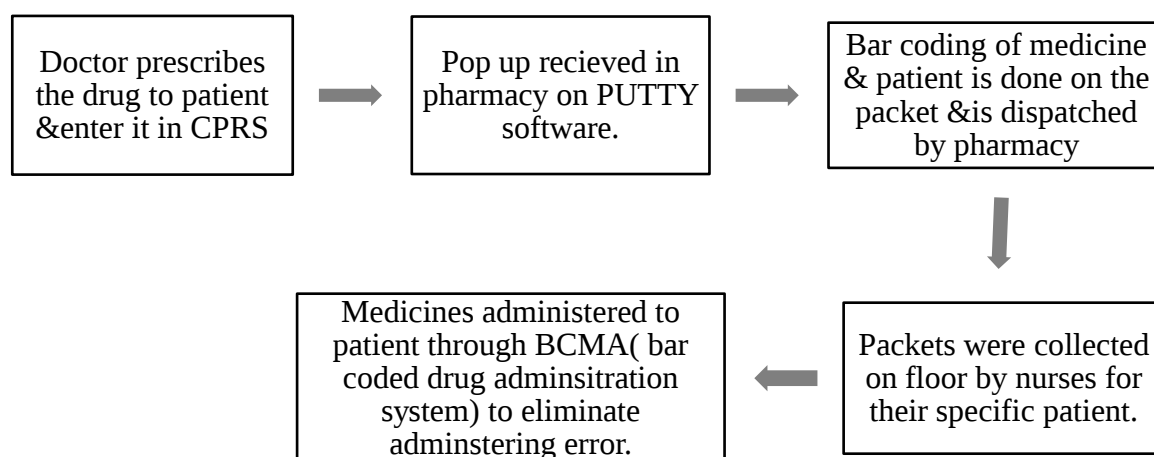
- All reports are collected by PCC/PCE & Pending reports / tests status updated in excel sheet

- Reports are collated & handed over to concerned doctors for health summary.
- Patient visits doctors for review consult. Health summary & reports are handed over to the patients.

Pharmacy

- The pharmacy department provides expertise in proper storage, stocking, dispensing and facilitating the administration of medication. The pharmacy ensures round the clock availability of medication for the out patients as well as the inpatients of the hospital.
- The pharmacy has been divided into two major sections:
 - Out Patient Pharmacy (OPP)
 - In-Patient Pharmacy (IPP)

Process of IPP



2 Types of order:-

- STAT Order(emergently needed) = TAT is half hour
- Routine orders (goes once for each floor containing medicines for 24 hrs)= TAT is 2 hrs
- **PUTTY (vista)** is the software used in pharmacy for keeping record of the drugs.
- Inventory management by Economic order Quantity analysis is carried out by the pharmacy for deciding the stock to be kept in pharmacy at a particular moment of time.

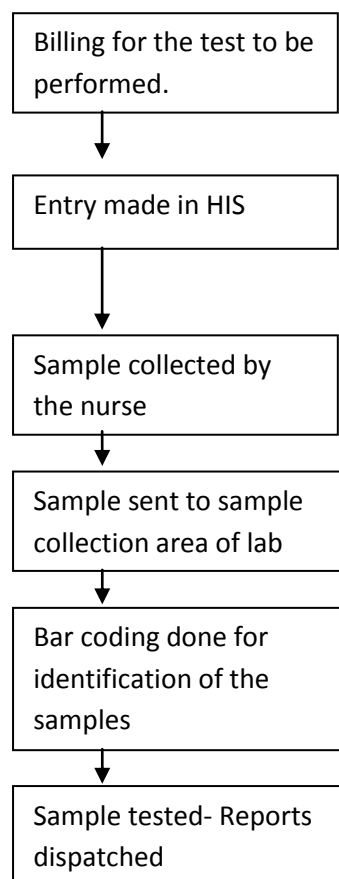
Laboratory Medicine:

- Serological Examinations
- Hematological Examination
- Bio-Chemistry analysis
- Blood Culture
- Cytological Examination
- Histopathology Test
- Oncology Test
- Microbiological Examination

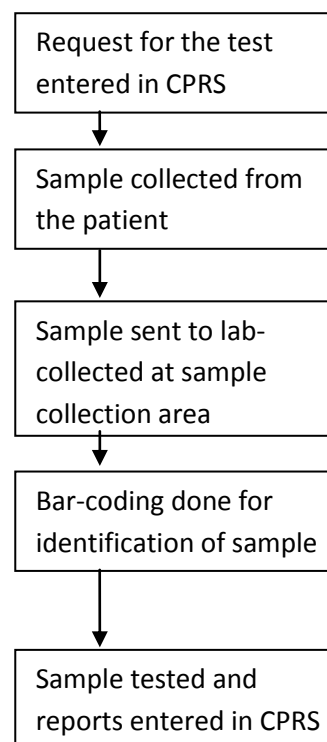
The lab is accredited by NABH, ISO15189 2007. It is a lean lab with no segregation of testing areas i.e. all the tests were performed at a same place.

Process:

OPD



IPD



Merits

- TAT is maintained at 2 hours for feasible tests

- Patients in ICU and Triage are given priority for testing
- There is a backup of every machine present in the lab

Problems Faced

Time lag due to presence of more touch points in receiving the sample

Engineering department

Location - Basement -1

Layout - Electrical room , AC plant room, pump room , office

Work Process

- **Civil** - Building maintenance
- **Mechanical** - machine , water supply, chiller plant
- **Electrical** - power back up (750 kilowatts- 2 generators), solar heater, NDPLI supply
- **Plumbing** - Fire fighting system.

Biomedical department

- Located on basement 1st floor
- Layout = one main office , Gas manifold room

Works on basic 4 processes:

- I. Installation and commissioning of machinery
- II. Preventive maintenance schedule.
- III. Callibration- once every six months regarding temperature control, speed, pressure.
- IV. Breakdown - Shayak system, through phone calls.

TO STUDY THE TURN AROUND TIME FOR RADIOLOGICAL PROCEDURES (ULTRASOUND & X- RAY)

Introduction

The department of Radiology provides a full range of imaging services for newborns , infants , children , teenagers , young adults, pregnant women and old patients in Max Super speciality hospital Shalimar bagh.

Patients visit Radiology department for various purposes, like to get their disease diagnosed and further treatment with consultation. Not only for treatment but also as a preventive measure in case of preventive health programmes.

Radiology at MSSH is comprises of:

- **Ultrasound**
- **X – ray**
- **Mammography**
- **CT scan**
- **MRI**

The importance of Radiology:

Radiology uses medical imaging technology to diagnose and treat medical conditions. Radiology has been used for medical purposes for over a century and remains a cornerstone of the medical field. Electromagnetic energy produces visible images that are then read and interpreted by radiologists. Physicians use the information gained through radiological imaging to diagnose, treat and monitor injuries and diseases. Cancer and other diseases can also be diagnosed using concentrated doses. .

Functions of Radiology:

- Early diagnosis, curative, preventive and rehabilitative care.
- Patient registration and scheduling.
- Radiology department workflow management.
- Reporting and print out.
- Modality and material management.
- Patient list management.
- Maintaining registers regarding dispatch.

RATIONALE OF THE STUDY:

In today's fast moving world and increased sedentary lifestyle the risk of various diseases is increasing day by day and due to increased education people have become aware about the diseases and want to get themselves checked and cured.

Radiology plays a major role in diagnosing and treating diseases. And due to lack of time people want services without any delay . As it was seen that there was delay in dispatch of reports, therefore , periodical study of the process and services of radiology are required for continuous improvement to achieve service excellence.

The study was conducted at the Radiology department of Max Super Specialty hospital, Shalimar Bagh. The hospital has been established almost 2 years back and there is gradual increase in patients day by day

Therefore it was felt that there is a need to study the time taken for the various radiological procedures starting from when the patient arrived or got the billing done till the patients received the final reports. The finding of the study would serve as guideline for information for future improvement, modification in the knowledge, processes, use of facility and optimum utilization of human and material resources.

OBJECTIVES

The study was undertaken with the following objectives:

- To study the turnaround time taken for each patient in radiology department.
- To identify the problem in the processes and service delivery system from patient's perspective leading to delay.
- To analyze the collected information and suggest recommendations for the same.
- To determine the percentage of cases falling out of the defined turnaround time.

REVIEW OF LITERATURE

Structured radiology reporting:

A 4-year case study of 160,000 reports.

Gerald D . Berman, M.D

(Director of radiology, Midway Hospital Medical Center , Co founder , StructuRad LLC)

Richard N. Gray, M.D

(Chief , Department of neuroradiology , Midway hospital medical center)

David Liu , Ph.D

(Professor , California state university, Northridge)

Presented at the

Integrating the healthcare enterprise (IHE) Symposium of the radiological Society of North AMERICA 2001 annual meeting Nov 25- 30 , 2001.

This paper analyzes the use of structured radiology reports since 1997 at Midway hospital medical center , which is a full modality of 150 bed community hospital located in Los Angeles , California .they describe the transition from a conventional transcription based reporting system to one in which radiologists create reports for 12 radiology modalities directly through a structured reporting system. M more than 160,000 reports have been produced with a structured system. Compared to transcription the structured reporting system has 1. Improved quality and consistency of reports. 2. Enabled instantaneous dissemination of reports 3. Eliminated transcription costs 4. Automated abstraction of reports with CPT and ICD -9 codes. The success of this system depends on the completeness of structured report templates as well as the ability to produce natural English sentences from structured input.

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

[Boland GW](#), [Halpern EF](#), [Gazelle GS](#).

Source

Department of Radiology, Massachusetts General Hospital and Harvard Medical School, White Bldg. 270C, 55 Fruit St., Boston, MA 02114, USA. gboland@partners.org

Expedited finalized radiologist report turnaround times (RTAT) are considered an important quality care metric in medicine. This study was performed to evaluate the impact of radiologist pay-for-performance (PFP) program on reducing RTAT

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. Mean C-F, C-P, and P-F for all reports decreased significantly from baseline to immediate to post period ($p < 0.0001$), with the largest effect on the P-F component. Similarly, divisional C-F, C-P,

and P-F also significantly decreased ($p < 0.0001$) for all divisions except the C-F for nuclear and neurovascular radiology from baseline to immediate period and the C-P component from baseline to post period for cardiac radiology.

A radiologist PFP program appears to have a marked effect on expediting final report turnaround times, which continues after its termination.

METHODOLOGY

The methodology adopted to achieve the study objective was:

Study design: An observational type of study was conducted to understand the process flow of activities in radiology and identify the problems.

Study area- Radiology department of Max Super Speciality Hospital in Shalimarbagh, New Delhi.

Data collection technique

Primary data:-

Regarding the turn around time involved in the process of radiological procedures was collected with the help of **TAT tracking sheet** consisting of:-

- Billing time
- Patient arrival time
- Time at which patient enters the room
- Time at which patient leaves the room
- Time at which reports were dispatched

The patients tracked were between 8:00a.m to 4:00pm

This was followed by calculating the percentage of cases falling out of TAT and average waiting time for the ultrasound and x-ray patients.

Secondary data was collected from radiology registers for calculation of sample size.

Regular interaction was done with patient, technician, gda and radiologists to understand the process and identify the core issues leading to delay.

Study timings :-

Study was carried out for - 8 days (22 April,13 - 1May,13)

Patients were tracked from - 8 a.m – 4 p.m

Sampling technique :- Convenience sampling

As the time for study was limited from 8:00 a.m – 9:00 p.m

Sample size:- 30% of last month's patients were taken for the study.

i.e 70 was traced for ultrasound and 71 for x-ray.

What is turnaround time ?

Turnaround time (TAT) for

- **OP** - is the time taken from request / invoice generation for investigation till the report is dispatched.
- **IP & PHP** – is the time taken from patient arrival in department till report dispatch

Defined TAT for radiological procedures

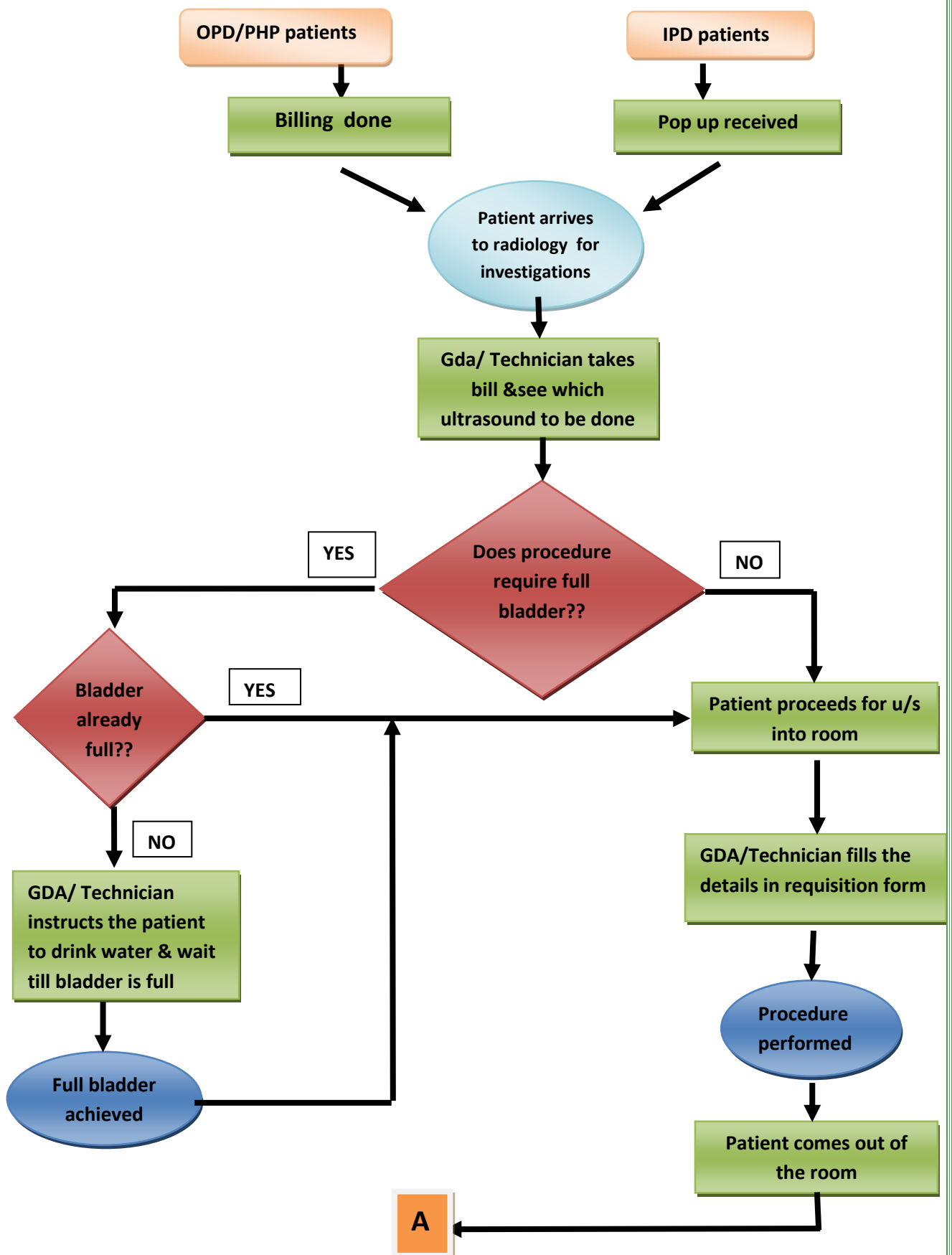
- For tests done from **8 am to 4 pm:**

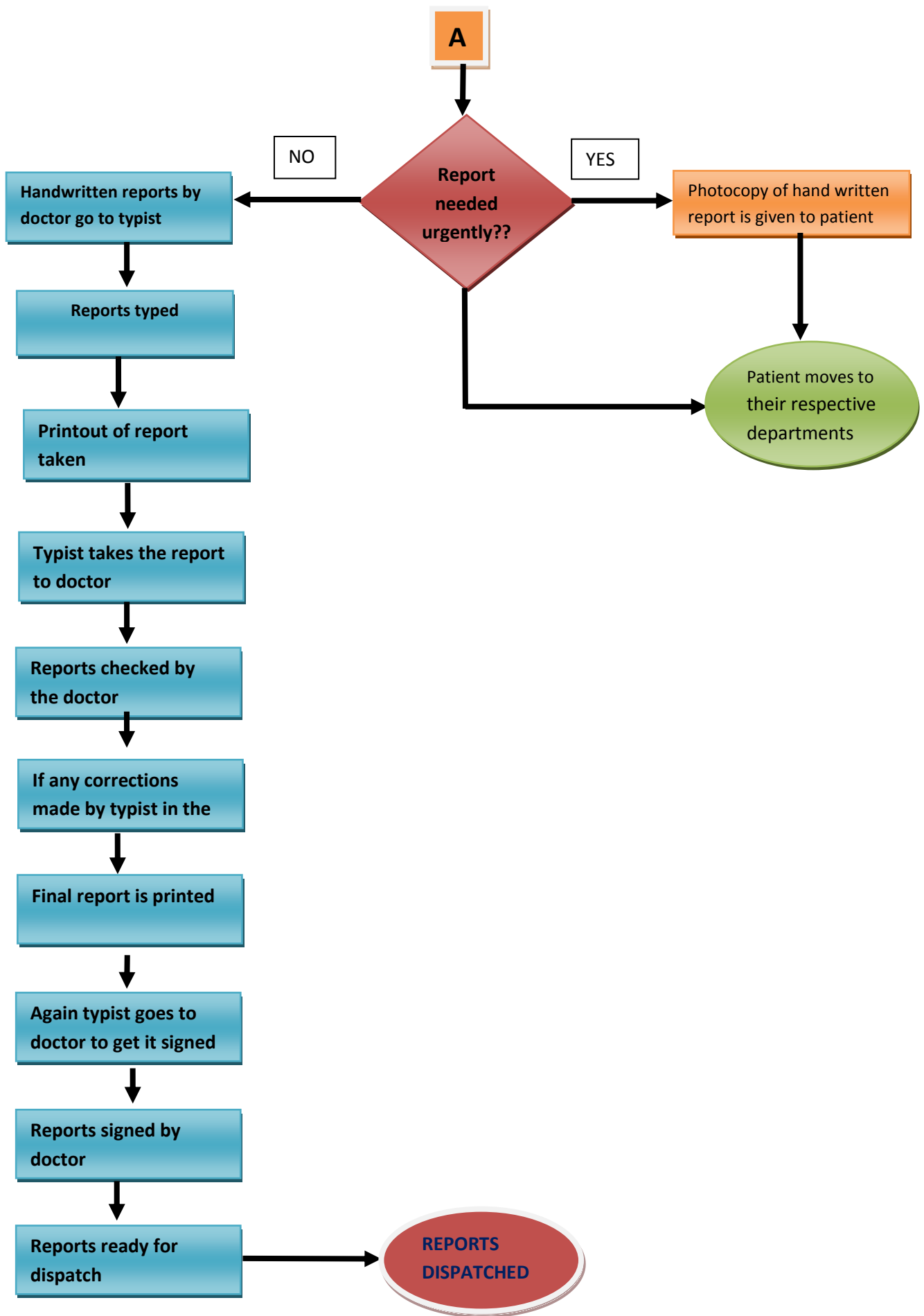
Reports to be dispatched on the same day by **5:30 pm.**

- For tests done **after 4 pm:**

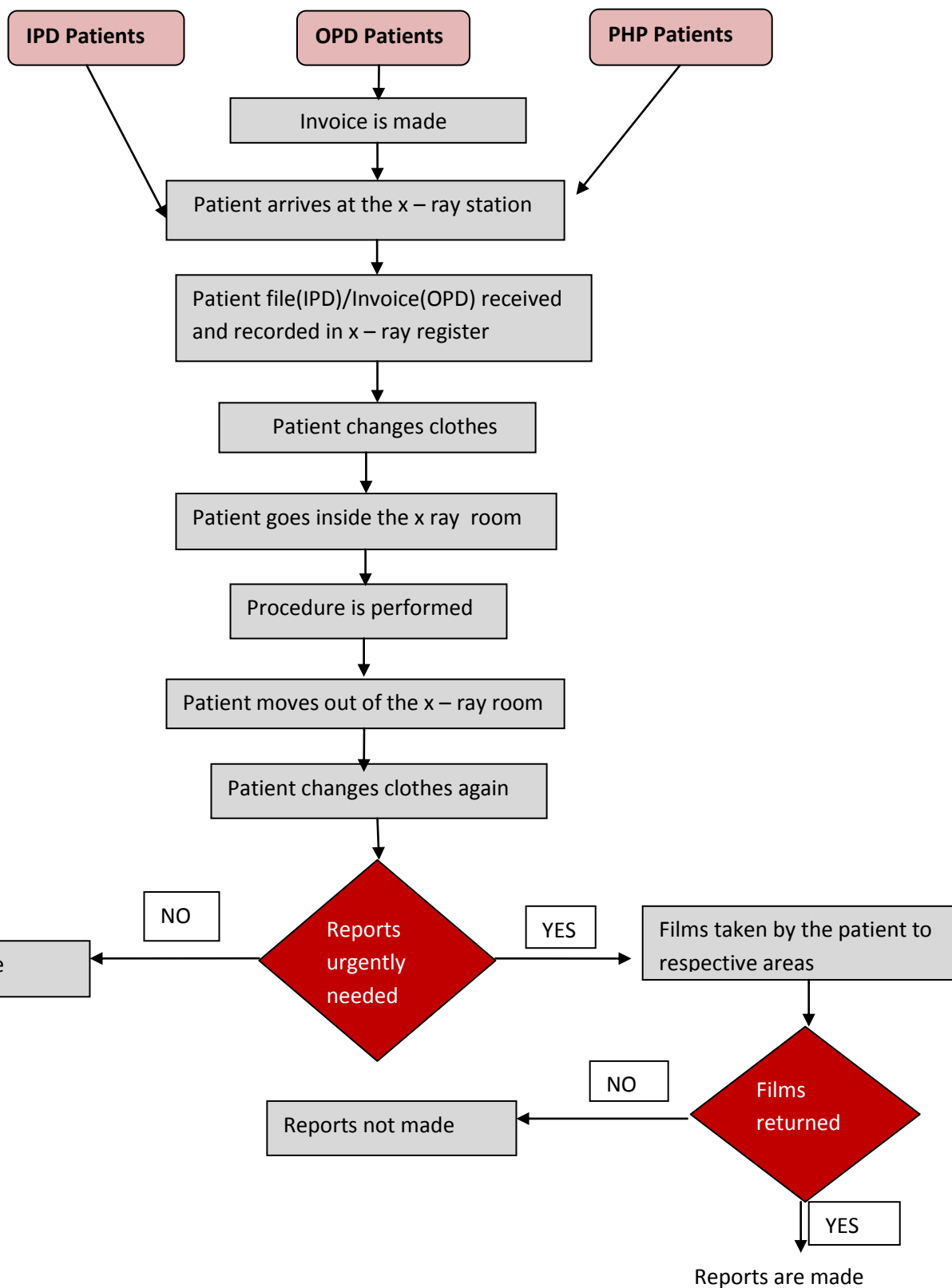
Reports to be dispatched next day by **12 noon.**

Process flow of ultrasound





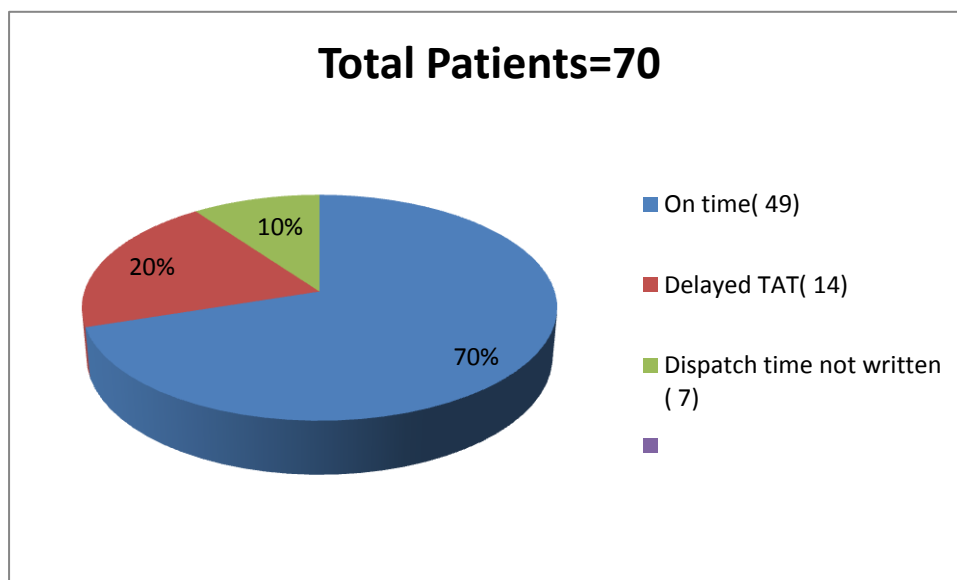
PROCESS MAPPING FOR X- RAY



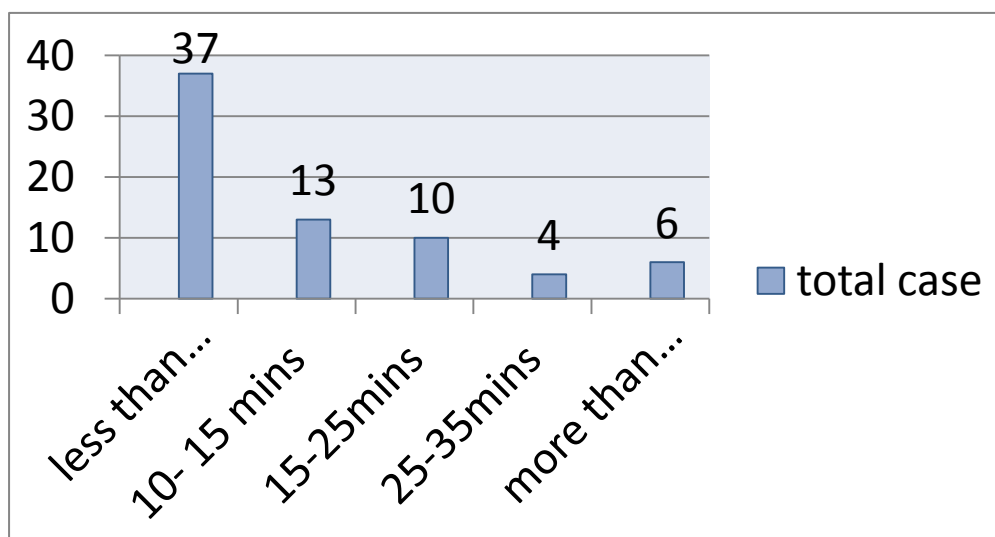
STUDY FINDINGS FOR ULTRASOUND:-

TAT ANALYSIS FOR ULTRASOUND

(Reports for cases between 8:00a.m- 4:00p.m)



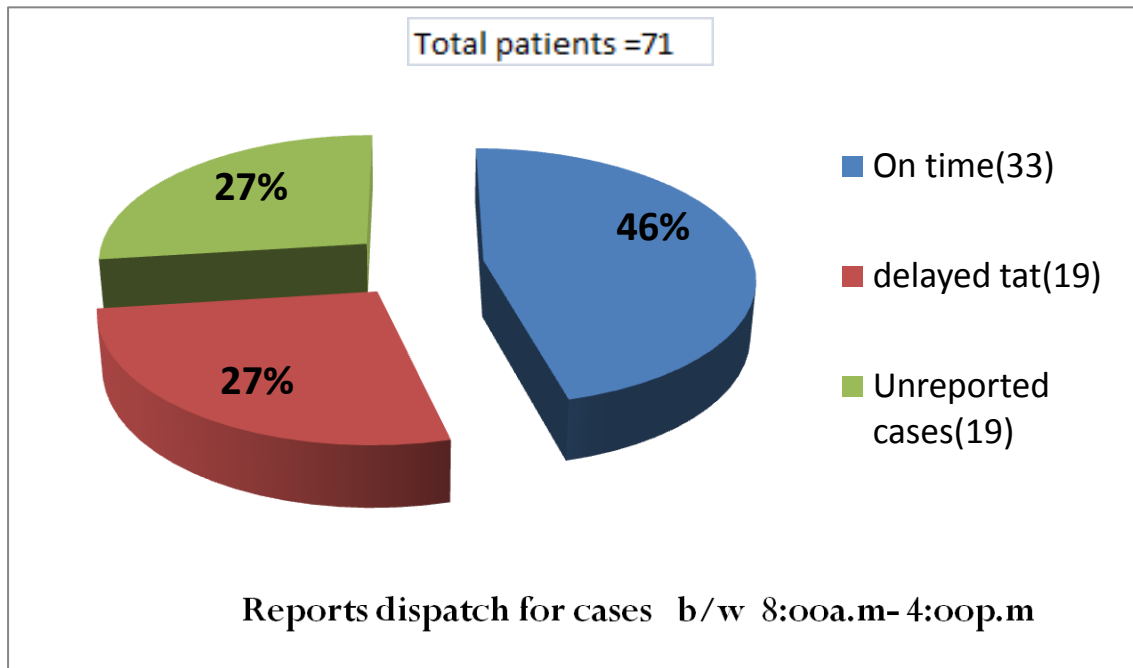
WAITING TIME FOR ULTRASOUND



STUDY FINDINGS OF X- RAY

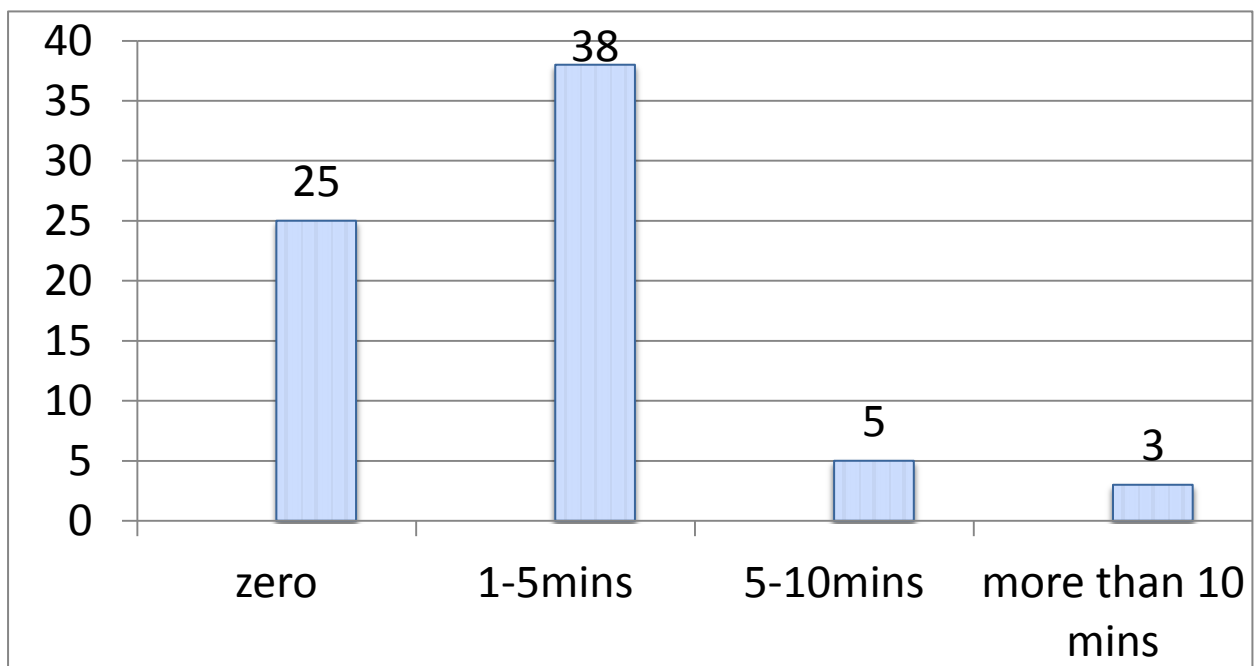
TAT ANALYSIS FOR X-RAY

(Reports dispatched for cases between 8:00a.m- 4:00p.m)



WAITING TIME FOR X-RAY PATIENTS

(TOTAL CASES= 71)



FINDINGS FOR ULTRASOUND:-

- Average waiting time = 13 mins
 - Patient arrival time in the department
- } = 28mins
- Patient leaving time from the department

FINDINGS FOR X-RAY:-

- Average waiting time = 2mins
 - Patient arrival time in the department
- } = 13mins
- Patient leaving time from the department

GAPS OF ULTRASOUND & X-RAY:-

- ❖ Same desk for billing of investigations, invoice, appointments, registration & report collection.
- ❖ Despite of intimation from radiology, delay in bringing the IPD patients leading to increased waiting time for OPD patients.
- ❖ GDA return the bill to patient, without entering their details into the register.
- ❖ No tracking system for patient.
- ❖ **No Water Dispenser**, patients have to bring their own water.
- ❖ Waiting time of approx 13- 15 mins. Mainly due to infrequent utilisation of second machine due to quality problem.
- ❖ Patient feel uncomfortable to hold pressure
- ❖ No proper queuing system.
- ❖ Lack of coordination.
- ❖ NO separate waiting lounge for radiology, PRESENTLY same used as EWS counter
- ❖ Attendants had to stand in the corridor leads to increased traffic.

- ❖ Sometimes unavailability of clothes is there in the changing room.
- ❖ Patients do not return the films after consultation therefore no report is made in such cases
- ❖ ONLY 1 TYPIST was there.
- ❖ Overburdened with work, devote extra hours.
- ❖ No typist on Sunday, lot of pending work done on Monday leads to delay in dispatch.
- ❖ Improper recording of dispatch time in the register.
- ❖ Typist has to move again& again to get the reports checked & signed by the doctor.
- ❖ Lot of paper is wasted.

RECOMMENDATIONS:

- ❖ Separate billing counter for radiological procedures as workload have increased.
- ❖ Training to PCC at billing counter regarding various radiological procedures
- ❖ Allotting of time slots should be pre planned for IPD patients(afternoon slots
- ❖ Bill should be kept within the department & pat. Details should be captured immediately.
- ❖ Numbers can be written on the bill , to improve QUEING SYSTEM.
- ❖ Proper seating for patients & their attendants, provided with some reading materials
- ❖ Patient entry register needs to be modified. (IN time can be changed with pat. arrival time
- ❖ **One major recommendations suggested was to reduce the long report making procedure by simple ONLINE system :**

- The handwritten report by doctor goes to typist ,typist types the report and then he can paste the report on share folder which the doctor can view on system itself , and if any correction required done by doctor on system and final report can then be printed and signed by the doctor
- By this way a lot paper can be saved & reduce the burden over the typist.

SUGGESTIONS IMPLEMENTED:-

- ❖ The online system suggested was been implemented in radiology department.
- ❖ Separate coordinator was been allotted for radiology department.
- ❖ Water dispenser made available.
- ❖ Separate waiting lounge was been identified for radiology patients.
- ❖ 5 'S was also been done in report collection section of opd to reduce the dispatch time from 5-7 minutes to 2-3 minutes.

REFERENCES

1. [^ "A Pilot Study of Comprehensive Ultrasound Education at the Wayne State University School of Medicine"](#). Jultrasoundmed.org. 2008-05-01. Retrieved 2012-08-03.

2 . [^ "Department of Radiology and Medical Imaging — School of Medicine at the University of Virginia"](#). Healthsystem.virginia.edu. 2012-02-17. Retrieved 2012-08-03.

3. Structured radiology reporting:

A 4-year case study of 160,000 reports.

Gerald D . Berman, M.D

(Director of radiology, Midway Hospital Medical Center , Co founder , StructuRad LLC)

Richard N. Gray, M.D

4. Integrating the healthcare enterprise(IHE) Symposium of the radiological Society of North America 2001 annual meeting November 25- 30 , 2001.