“Improving Waiting Time in Radiology Department”

A dissertation submitted in partial fulfillment of the requirements
For the award of

Post-Graduate Diploma in Health and Hospital Management

By

Dr.Ashish Malakar



International Institute of Health Management Research
New Delhi -110075
MAY, 2010

“Improving Waiting Time in Radiology Department”

A dissertation submitted in partial fulfillment of the requirements
For the award of
Post-Graduate Diploma in Health and Hospital Management
By

Dr.Ashish Malakar

Under the guidance of

Dr.Pinky Yadav
Addl. Med.Supt
Sri Balaji Action Medical Institute

Dr Dharmesh Kr Lal
Professor, IIHMR
Dwarka, New Delhi



International Institute of Health Management Research
New Delhi -110075
MAY, 2010

ABSTRACT

BACKGROUND**:** A challenging issue patient's face everyday with long wait time at the X-ray department of Sri Action Balaji Medical Institute, which necessicitates the study to find the causes leading to the long standing problem.METHODS: Convenient sampling was done by collecting views of 60 patients who answered to a questionnaire set. Subsequently a time motion study also was done with the same group of patients starting from the registration counter. Time of arrival is noted down on getting registered at the counter, then the time of getting inside the radiology room is noted down as getting in and finally noting the exit time of the patient.RESULTS: Using excell-sheet the average waiting time was found to be more in almost 50% cases. Than a comparative study was done with the various percentage results from pie chart analysis and time motion study analysis to derive resonable answers to the cause of increase in waiting time.A majority of 83% patients came through appointment and of them 51% patients were on time. Also for 57% patient's the waiting time was within 15 minutes, which is the standard TAT of SBAMI. 75 % complained of inadequate staff whereas a simillar 75% also gave their lowest remarks on staff behaviour. CONCLUSION:Overcrowding leading to increase in waiting time, understaffing, short of space, poor communication skills of the staff, criss-cross traffic, block appointments, inadequate sitting arrangements, lacking in public utility services etc

ACKNOWLEDGEMENT

It is my esteemed pleasure to present this dissertation project report and whole heartedly thank each and everyone who helped me in this task.

I express my heartfelt thanks to Dr AP Chaudhari, Medical Director, Sri Balaji Action Medical Institute , Paschim Vihar, New Delhi, for showing keen interest in this venture, providing a constructive criticism and encouragement which paved the way to the successful completion of this task.

I am thankful to my guide Dr Pinky Yadav, Addl. Medical Superintendent, who has shown me the right way of approach in doing my project and always been a source of guidance and inspiration for me.

I also thank my co-guide Dr Dharmesh Kr Lal, Professor Hospital and Health Administration, IIHMR who provided the extremely wise experience, guidance and constant motivation to me throughout this study.

I humbly thank all the staff members of hospital operations for their valuable guidance, encouragement to me.

I also thank my fellow colleagues who provided space and freedom to me for execution of my research project.

I am also grateful to the patients of this study for their cooperation and participation.

Dr Ashish Malakar

IIHMR, New Delhi

PART – I

INTERNSHIP REPORT

at

Sri Balaji Action Medical Institute
Paschim Vihar
New Delhi
10063

INTRODUCTION

Sri Balaji Action Institute is a world class hospital promoted by Lala Munni Lal Mange Ram Charitable Trust of Action Group of Companies. The infrastructure, equipment and technology have been integrated to provide globally compatible health care. The Institute offers medical facilities in all specialties and super -specialties. Its highly qualified doctors, trained nurses and dedicated para-medical staff provide quality health care services round-the-clock. With strength of 400 beds, all medical services are available under one roof.

- 11 State of art operation theatres with stainless steel cladding on walls and epoxy coating on floors for infection-free environment.
- Hi-tech critical care units of ICU, ICCU, Neonatal ICU with motorized beds.
- Complete Cardiology services including heart surgery, angiography, angioplasty, TMT, Stress echo and a dedicated Heart Command unit for cardiac emergencies.
- Mother and child complex with single room maternity care concept, Gastroenterology services including ERCP, GI Endoscopy, Liver Clinic and Neuro Sciences unit.
- Complete Urology and Nephrology services including Dialysis unit.
- Full backup of Laboratory services and Blood Bank with 24 hours services.
- Advanced imaging and Radio diagnostics including X-ray, Ultrasound, Fluroscopy, Bone Densitometry, Mammography, 64 side CT Scan, MRI.

Registered with the Directorate of Health Services, Delhi Administration vide Certificate No.668 dated 01.09.2009, the Institute is approved under the Income Tax Act u/a 172(2)(ii)(b) for exemption of medical benefits for perquisites values in respect of medical treatment. The Institute is on panel of a number of Government of India and other Public Sector Undertakings and the medical expenses incurred are reimbursable by the organizations.

Mission

Sri Balaji Action Balaji Institute has been established with a mission to provide world-class health care facilities to all sections of the society with a humanitarian touch, whilst maintaining high standards of ethical practices and professional competency with emphasis on training and education leading to research.

Vision

To become the largest healthcare provider NGO in the country with the human touch.

Quality policy

The Institute is committed to improve the health and satisfaction level of the patients by ensuring continual improvement by –

- Providing high quality care according to the health needs of the patients
- Facilitating patient satisfaction by service and ensuring the dignity and rights of patients.
- Providing a safe and conducive work environment for staff.
- Ensuring accountable, consultative and transparent management process.
- Providing basic and continuing education of staff.

HISTORY

In 1980 Lal Muni Lal Mange Ram Charitable Trust started a small 25 bed hospital at their native place at Hisar, Haryana and now it has taken the shape of modern 80 bedded multi- speciality hospital and thereafter an OPD clinic at Shazada Bagh in West Delhi. The major thrust in healthcare services came in 2005 with the opening of Sri Balaji Action Medical Institute at Paschim Vihar, New Delhi. It was inaugurated on 10th April, 2005 by former hon'ble Vice President of India, Shri Bhairon Singh Shekawat.

The Logo of the Institute portrays its philosophy; it consists of a hand embracing the flame of life with a sphere in the background. The **Human Hand** represents the healing touch and healthcare our dedicated teams of professional provide to brighten the lives of those who come to us. The **Flame** denotes the traditional values of honesty and selfless service towards our patients. The **Sphere** in the background reflects our commitment to maintain international standards of excellence

LOCATION

FC-34, A-4,Paschim Vihar

New Delhi -110063

Tel.: 011-42888888

Fax.: 011-25270725

Website : www.actionhospital.com

AWARDS

Sri Balaji Action Medical Institute is a multi-super speciality an ISO 9001:2000 certified hospital with NABL accredited laboratory. The benchmark of hospital quality NABH accreditation is in progress.

SPECIALITIES AND SUPER SPECIALITIES

The Institute has over 35 medical specialities and over 10 special clinics. It has admitted more than 60,000 inpatients while 6 lacs have availed OPD facilities and 20,000 patients have undergone successful surgery procedures.

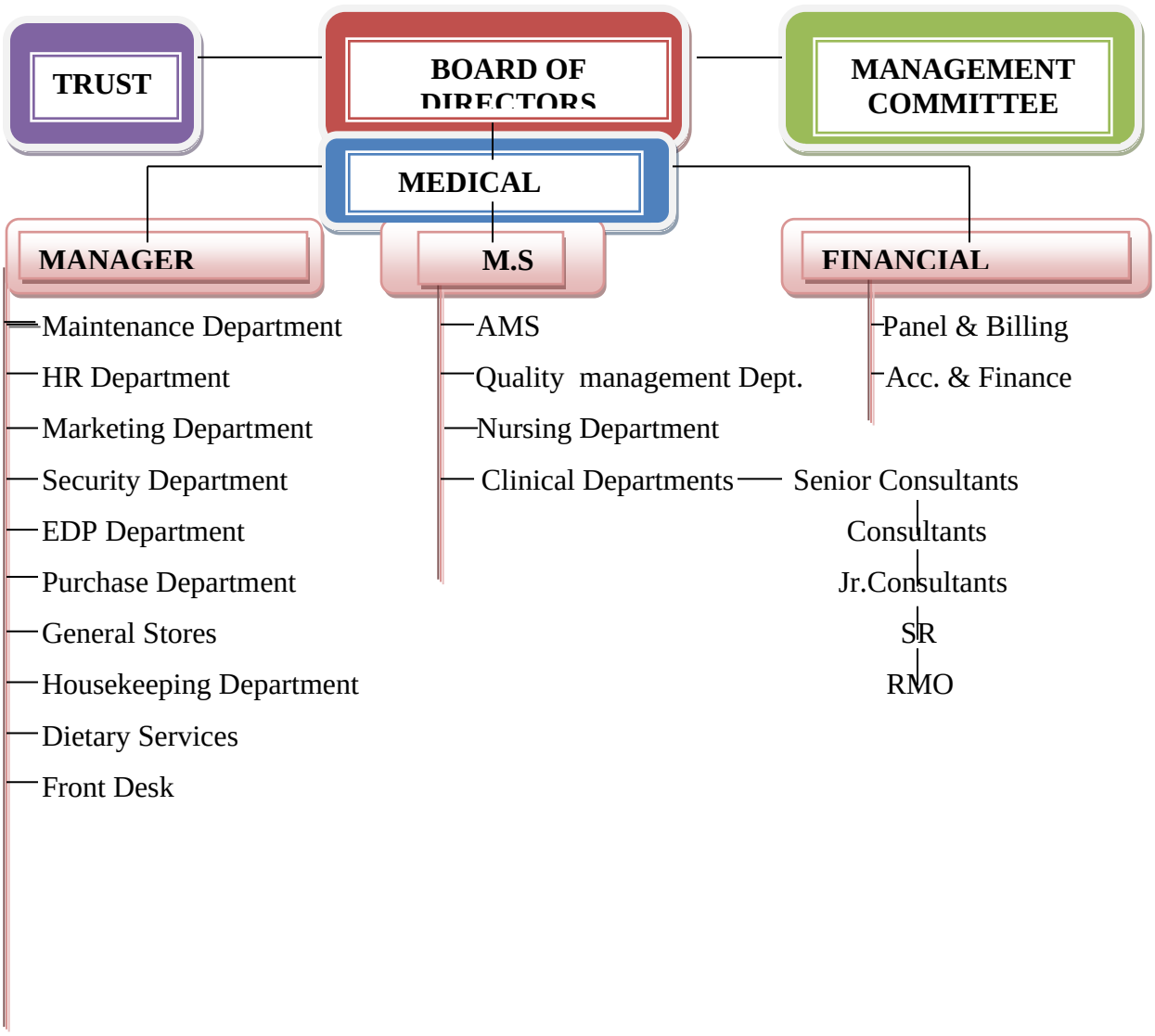
LIST OF SPECIALITIES AND SUPER SPECIALITIES

Anaesthesiology	Neurosurgery	Cardiothoracic Vascular Surgery
Densitry	Opthalmology	Ear, Nose and Throat
Endocrinology	Plastic Surgery	Gastroentrology Surgery
Neurology	Rheumatology	Paediatric Medicine
Podiatry	Orthopedics	Paediatric Cardiology
Rehabilitation	Psychiatry	Respiratory Medicine
Urology	Gasrtrentrology	Obstetrics and Gynaecology
Cardiology	General Surgery	Occupational Therapy
Dermatology	Pediatric Surgery	Internal/General Medicine
Neprology	Clinical Psychology	
Oncology	Gynae Oncology	

SPECIALITY CLINICS

Liver Clinic	**Spine Clinic**
Knee Clinic	**Interventional Radiology**
Pancrato-Biliary Clinic	**Endocrine Surgery**
Breath Easy Clinic (Asthma)	**Diabetic Foot Care**
Teenage/Obesity/Short Stature Clinic	**Pain Clinic**
Child Development Clinic	**Strokes Clinic**
Arthritis & Sports injury Clinic	**Lactation Clinic**
Vitreo-Retina Clinic	

ORGANOGRAM



DEPARTMENTS

GROUND FLOOR

OPD

General OPD in all major specialties and super specialties is conducted by the institute. OPD cards are deposited in the respective OPD.

General OPD: timings for specialties are daily from 9am 11am. OPD cards are made from 8:30am to 10:30am. Timings for super specialties are daily from 12:00noon to 1pm. OPD cards are made from 11:30 am to 12:30pm. General OPD registration charges are Rs 5/- and consultation is Rs 10/- per visit. All investigations are billed by the OPD counter in the main lobby and the payment taken there itself.

Panel OPD: (Registration)

Specialty: 10:45am – 11:15am

Super specialty: 12:45pm – 1:15pm

Private OPD: schedule of timing for private OPD can be collected from the reception.

Timing: 9am – 7pm

Location: ground floor

EMERGENCY

Location : at ground floor in north wing. Services are provided 24x7hrs

A team of experts from all the disciplines are available round the clock, with attached emergency OT and critical observation ward. Cardiac ambulance and normal ambulance is available round the clock for the pick up and drop facility of the patients and transfer to other centers.

Staffing:

- Morning: 2 CMOs
- Evening: 2 CMOs
- Night: 2 CMOs

Nursing staff-

- Morning: 6 nursing staff
- Evening: 6 nursing staff
- Night: 4 nursing staff

SAMPLE COLLECTION ROOM

Location : ground floor north wing. Lab facilities are located centrally, and has high tech investigation equipment for accurate and reliable result with patient friendly sample collection system. Services are offered 24x7 hrs

PLASTER ROOM

Location: north wing ground floor. Services are offered 24x7 hrs.

1 technician in each shift and 1 orthopaedic surgeon 24 x 7 hr

MINOR OT

Located : at north wing ground floor, services are offered 24x7hrs.

Staffing: 1 male nurse + 1 female nurse – 9am – 5pm

(evening and night coverage is given by emergency nursing staff)

ECHO/TMT

Located at ground floor west wing, Echo and TMT services are offered from 9am – 5:30pm and have 1 technician, 1 staff nurse and 1 cardiologist

HEALTH CHECK-UP

Located in west wing ground floor, various packages offered are:

- ✓ Action preventive health check up
- ✓ Action executive health check up
- ✓ Action heart health check up
- ✓ Action comprehensive health check up
- ✓ Action well women check up
- ✓ Action child health check up
- ✓ Action general health check up
- ✓ Action comprehensive cardiac health check up

NEURO ICU

Located at west wing ground floor. Services are offered 24 x 7 hrs. It has 1 doctor and 8 nursing staff in every shift, back up provided by anesthetist. **Capacity**- 12 beds.

EEG/ PFT

Located at west wing ground floor. Services are offered 9am- 5pm with 1 technician and 1 staff nurse and team of doctors.

GASTRO DEPARTMENT

Located in west wing ground floor. Services are offered 9am-5pm with 1 technician and gastroenterologist.

RECEPTION

Located at south wing ground floor, in the main lobby of ground floor . Enquiries regarding patient, status etc can be made here on phone and in person. Round the clock admission facility is available through emergency and OPD.

Staffing: morning: 3 staff for reception and 2 staff for call center

Evening; 2 staff for reception and 2 staff for call center

Night; 1 staff for reception and 1 staff for call center

BILLING

Located at south wing ground floor. Services are offered 24 x 7 hrs.

Staffing: morning: 6 billing executives

Evening: 4 billing executives

Night: 1 billing executive

AMS OFFICE

Located at the ground floor.

PANEL DESK

Located at south wing ground floor. Services are offered 9am-5:30pm.

Staffing: 1 panel incharge + 1 asstt. Panel incharge + 4 panel executives

RADIOLOGY

Located at south wing ground floor. Services are offerd 24 x 7 hrs.

The department of Radiology provides State of the Art Diagnostic Services :The Radiology and Imaging System: All under one roof equipped with latest MRI 1.5 Tesla MAGNETOM AVANTO featuring total imaging matrix TIM which permits seamless whole body anatomical coverage without patient repositioning, SOMATOM EMOTION DUO CT Scanner dual slice, sub second with all advanced applications for CT angiography, volume rendering, AXIOM ICONOS remote controlled Digital Fluoroscopy, and Compound Radiography CR System and Color Doppler, ultra-sonography. Hologic Bone Densitometer DXA for detection of osteoporosis, thinning of bones and a dedicated mammography for early detection of breast cancer.

Staffing:

The staffing pattern of radiology department at SBAMI constitutes the following :-

- Radiologist - Consultant-1
  - Junior consultants-2
- Radiographers - 8 in number (including 3 shifts and 1 radiographer in Printing)
- Dark room assist. - 4 (3 shifts)
- Attendant - 2 ward boy round the clock
- Record clerk - 1
- Receptionist - 1

OPD PHARMACY

Located at south wing ground floor. Open from 8:30AM to 10PM.

HELPLINE

Located at south wing ground floor.

FIRST FLOOR

North Wing

- It has 10 private beds and 10 semi-private beds.
- There is centrally located Nursing Station and Pantry

South Wing

- It has 48 economy beds.
- HDU unit

West Wing

1. Dialysis Unit

It is a well equipped unit with 16 beds and 16 dialysis machines with patient input of 50-60 patients per day.

Staffing

Technical Staff- 2 Senior technician, 3 Junior technician

Nursing staff-(8 Junior sisters & 1 sister Incharge)

The staff works in 3 shifts

- 7:30am to11:30am
- 12:00 noon to 4:30pm
- 5:00pm to 9:30pm

All Patients are received according to their appointments (twice a week or thrice a week) SBAMI also has 4 beds reserved for BPL patients.

2. Mother and child complex

It takes care of the new borns, pre-term and critically sick babies with well equipped NICU, nurseries (Observation nursery, Infected patients nursery), nutrition clinic, immunization clinic, and well baby clinic.

It is equipped with:

a. electronic labor table latest monitors,
b. cardiotocograph for external fetal monitoring,

c. Hi-tech Neo-natal resuscitation unit beside facilities of Servo control warmers,
d. latest generation ventilators,
e. transport incubators,
f. multi-para monitoring,
g. double surface photo therapy

For the first time in Delhi the complex offers facility of latest international concept of natural child birth in a **single room maternity care (SRMC)** with special birthing bed. Mother and Child Complex has 12 beds (SRMC-2 beds, Private-2 beds ,Semi Private-2 beds,Economy-6beds

Staffing:

HOD1

Sister Incharge - 1

Senior Residents -4 working in 3 shifts

Sisters - 9 working in 3 shifts

3. Heart Command-1

Staffing - 22 sisters on shift duties with 1 Sister Incharge in morning hours.The cardiac center provides immediate intensive care to the critical patients.It is equipped with sophisticated investigative facilities and crucial decisions involving Intra-Aortic Balloon Pump, Ventilator, Pacing, Angioplasty or Bypass are taken without delay. The intensive care units provide constant monitoring and critical care to the post operative patients.

SECOND FLOOR

North Wing

- It has 10 private beds ,6 semi-private beds,3 economy and Day care beds.
- There is centrally located Nursing Station and Pantry

South Wing

- It has 12 economy beds, 9 beds in general ward,15 beds for EWS patients, and 6 bedded HDU.
- There is centrally located Nursing Station and Pantry
- It also has a Bronchoscopy room.

West Wing

1. **OT Complex**

- At SBAMI has **11 state of the art Operation Theatres (O.T.)** . These OT'S are designed as per international standards with central supply and laminar airflow , stainless steel cladding on walls and epoxy coating on the floor for electro static and infection free environment and is equipped with specialized electrically operated tables, operating lights and anesthesia machines.
- Washable anti static and conductive flooring resistant to mechanical stress and dynamic loads
- Each theatre with 4 air exhausts outlets one at each corner near floor is provided with HEPA filters and a central plain air covered with hand woven perforated polyester sheet. All combined together give the air flow a laminar pattern with 20 air changes per hour of fresh air to minimize the surgical site infections (SSI)
- The ceiling mounted laminar flow friendly Operating Lights emitting white and shadow less light.
- All theatres are provided with continuous central supply for Oxygen, Nitrous Oxide, high and low pressure air at required flow and pressures. 6 theatres are fitted with extra ceiling
- mounted endoscopic pendants with central supply of Carbon Dioxide for Laparoscopic surgeries
- Regular electricity supply through UPS is ensured in the theatres

2. ICU

Intensive Care Unit is an integral part of the hospital for the management of critically ill patients.

Location: intensive care unit is located on the 2rd floor of the hospital. It is a 13-bedded each divided into 2 Sub-units - Medical ICU and Surgical ICU. The unit handles more than 1200 admissions annually.

Staffing:

- A dedicated team of a ICU in-charge (Medical officer) , 7 residents (on rotation basis),
- 1 Intensivist each and 35 nurses on rotation basis and 1 sister in charge in each ICU.
- Anesthesiologists' and Physicians present in the ICU with attending Cardiologist, Chest physician and Nephrologists provide multidisciplinary care to the patients.

THIRD FLOOR

North Wing

- It has 10 private beds and 10 semi-private rooms.
- There is centrally located Nursing Station and Pantry
- Patients after their condition is stable in CTVS-Recovery are shifted to semi-private rooms

South Wing

- It is not operational at present
- There is a CTVS-dressing room

West Wing

1. **Cath Lab**

   - The procedures done in Cath Lab are : Angiography,Angioplasty,Temporary Pacemaker Implantation (TPI),Pulmonary Pacemaker Implantation (PPI) and IABP

   - Reception staff – Prepares reports of the patients who have undergone Angiography/Angioplasty. Also, prepares discharge summary of the patients admitted to Heart Command-1 and 3.

2. **Cath Recovery :** It is divided into Pre-Angio ward (3 beds) and Post- Angio ward (2 beds).The patients before and after Angiography/Angioplasty are kept here for observation and medication.

   Staffing: 1 Sister Incharge for Cath Lab and Cath Recovery
   Morning : 8:00 am - 4:30 pm (3 nursing staff)
   Evening : 1:00 pm - 9:00 pm (2 nursing staff)

3. **Heart Command-3** - It is the cardiac ICU having 15 beds. The There is a centrally located Nursing Station headed by Sister In charge .It provides 24x7 hours services and is well equipped to provide high quality care to critically ill patients. Visiting hours are 10:00 a.m. to 11:00 a.m.

   Staffing : Morning : 8:00 am – 2:00 pm (7 nursing staff + 1 Sister In charge)
   Evening : 2:00 pm - 8:00 pm (8 nursing staff)
   Night : 8:00 pm - 8:00 am (8 nursing staff)

4. **CTVS-OT**

Coronary Bypass Grafting (CABG) and surgery for Heart Valve problems, both these conditions are very common in India and they are treated very successfully by a highly skilled surgical team of CTVS-OT. **Operating room** is spacious, easy to clean, and well equipped. Electricity support has backup systems in case of a black-out for Stable & uninterrupted supply of power.

5. **CTVS-Recovery**

After surgery, patients are admitted to CTVS-Recovery for post-operative care .The Nurse to patients ratio: 2:1. Visiting hours for attendants are 11:00 a.m. to 11.15 a.m. and 6.00 p.m. to 6.15 p.m.

FOURTH FLOOR

North Wing

- It has 11 deluxe rooms, 2 suite rooms and 1 super deluxe suite
- Nursing Station and Pantry are centrally located.
- Joint replacement unit is also there, where patients after joint surgery are admitted.

South wing

- It has 20 semi-private beds.
- It has Administration Block , HR department , Marketing department and Meeting room

MEDICAL RECORD DEPARTMENT-

It is the inseparable and one of the most important department in hospital settings.

Purpose

1) **For patients**
- Helps in legal matters
- For getting insurance claims
- As a part of patient right to get information about the treatment

2) **For health care providers**
- Helps in detection diagnosis and treatment
- As a means of communication b/w health care providers
- Documentation of care and services provided to the patients.

3) **For study and research purposes**- provides valuable statistics

4) **For administration**
- Internal hospital auditing
- Quality assurance
- Identifying training needs
- Calculation of work load in various departments –overburdened or underutilization.

5) Ministry of health

- Provide vital statistics-like number of deaths and births
- Notification of infectious diseases – to calculate disease burden in community.

Processes in MRD

1) Medical record maintenance process

Step 1) – files are **brought** by ward boys in MRD after the death or discharge of patient.
-files are put in files receiving rack.
- each set of files accompanied by a ward register, indicating to which ward they belong.
Starts after 2 pm onwards.

Step2) **Collection or receiving of files**

- Files are picked up from the racks and are checked for any deficiency.
- If they are complete then they are received by putting receiving signatures in the ward register with date.
- If incomplete file in any sense then a slip is put on the front cover and incomplete part is indicated on it and sent back with the register, to be completed by respective ward.

DISCREPENCY REGISTER maintained for the incomplete files sent back to respective wards. Also reported to the higher authority.

Step 3) **assembling of files**
In this step all the documents attached are arranged in a prescribed manner by following a check list, which arranges the documents in such a way that a chronological sequence is created
Step 4) **coding**
Each file is given a ICD-10 coding so that it can describe the type of disease the patient suffered from.
Step 5) **entries into the computer excel sheet software program**.
Now all the entries are put in the computer software program like what are the documents, time of receiving file, reports of blood and radiology, mlc reports etc.
Step 6) **indexing**
In this step coding are entered into the computer software and an index of patients of particular disease is created by using ICD-10 Codings.

Step7**) filing**
Here the files are arranged in the prescribed racks.
Each rack can have 80 files. Slip is pasted on the rack to indicate IP number for easy access to files.

2) **Retrieval process**

Whenever patient or his relative comes to see information about his treatment with IPno. Firstly the details are checked in the computer and information is given.

- If the patient demand the documents then

File is retrieved from the rack, now three conditions arise

1) **If it is a cash file** , then all the original reports are given on request and deposit of prescribed fee. But the photocopies are kept . signature and receiving information is taken on the file.
2) **If it is a credit file**, the only photocopies are provided and originals are kept until the payments are received.
3) If **it is a MLC case file**, no original documents given, only photocopies of reports provided on written request application forwarded by higher authority. In case of claims processing only reports can be given on special request but films of reports are kept in originals.

- **Tracer cards** are put at the place of file to indicate the file is out of MRD and entry is made in **loan register** also.

Summons

The medical record depart. Takes care of summons to hospital authority.
It takes out the needed documents and make call to the concerned person reminding of the date and time of hearing of court.
Present documents in the court themselves if needed and questions are answered also by staff .

Vital statistics

MRD deptt. Medical record officer make entries of all the births and deaths into the MCD site and take out the reference slip, which to be collected by the related person to get the birth and death certificate from MCD.

Infectious disease notification

All the infectious diseases are notified to the govt. health site monthly or half monthly basis.

Census

Every day in the morning the census is prepared by the medical record officer, of last day.
Census describes the total dynamics, which happened last day, like
Admissions, discharge, deaths, births, bed occupied, bed occupancy rate, credit patients ,cash patients, new cases, repeat cases, GOPD, POPD, PENAL OPD, EWS.
Census copies sent to Administration deptt every day.

Housekeeping Department:

- outsourced to three private providers;
  - Krishna housekeeping services
  - Prabhat housekeeping services
  - L B housekeeping services

Activities

Shift timing and activities are same for all the floors of both the buildings

Duty hours -24*7

Shift timings-

Morning---8am to 5:00pm

Afternoon ---12 o clock to 9pm

Night ---9pm to 8am

(half hour for Tea break with Lunch/ Dinner)

Total staffs— 253 , including supervisors

- Krishna housekeeping services- 59 (46 males and 13 females)
- Prabhat housekeeping services – 79 (44 males and 35 females)
- L B housekeeping services – 115 (65 males and 50 females)

Housekeeping staff according to shiftwise:

Morning – 4 cleaning staff per floor, others engaged in separate departments

Evening – 4 cleaning staff per floor

Nignt – 4 cleaning staff per floor

LABORATORIES

The laboratory is NABL accredited and is located in the basement of SBAMI.

The laboratory receives samples from:

i. The OPD sample collection centers
ii. IPD
iii. Emergency

- The laboratory functions 24 hours on all weekdays.
- No mandatory prescription is required; the investigation is carried out if the patient wishes so even without a prescription.
- Each sample is labeled; the label carries the patient's name, the registration number and a bar code. The bar code is generated at the OPD sample collection center and is unique for every patient. This prevents mixing of samples.
- There is a toilet next to the OPD sample collection center for collection of urine samples. The container for collection of sample is provided by the hospital.
- In case a patient is found to be HIV positive, the lab in-charge communicates the result to the consultant doctor telephonically and ask to repeat or read back the procedure.
- In case of intra-operative cyto-histological investigation, the report is to be delivered within 20 minutes; this is done with the help of the latest Frozen Section Machine.
- The report is delivered within 2 hours in case of any emergency.
- The laboratory is cleaned daily with 1% hypochlorite solution. Fumigation of the cyto-histopathology and microbiology laboratories is done every week.
- Waste disposal mechanism is strictly followed in the laboratory.

CYTO-HISTOPATHOLOGY LABORATORY

The Cyto-histopathology samples are retained for **15-20 days**. In case of medico-legal cases, such samples are retained till the case is over.

This laboratory also has an Automated Frozen Section Machine, which gives the report in about 20 minutes as compared to the mechanical process that takes about 7-8 hours.

There is a separate clinical pathology room where urine and stool sample tests are carried out. This room has a centrifuge and a weighing machine.

The laboratory is fully computerized with all the analyzers linked to the computers (so that the data is fed automatically in the HIS); except the histopathology and microbiology laboratories where the data is entered manually to the HIS.

The laboratory information system (part of HIS) consists of:

- The patient's name,
- Registration number,
- The unique patient bar code,
- The investigation done, and
- The result of the investigation.

One of the senior consultants is always available to sort out any problems.

The entire staff undergoes medical examination before being appointed to rule out any disability that may affect his / her performance.

Every member of the staff is aware of the SOPs of the laboratory, which include patient preparation, sample collection and test procedures.

The head of the laboratory or the senior consultant on duty verifies all the reports. However, only the HOD verifies HIV-positive reports.

The laboratory adheres to strict quality control measures (both internal and external quality control measures.

There are separate sample reception counters for samples from the OPD and the IPD. The laboratory also has a room each for the consultant and the laboratory in-charge.

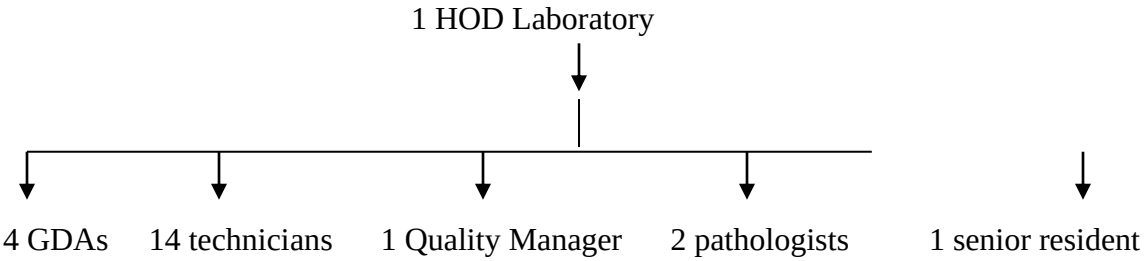
The supply of gas in and out of the laboratory is through a pipeline.

The cyto-histopathology and microbiology laboratories have a laminar airflow system with HEPA FILTERS.

Laboratory is well illuminated.

The benches and chairs are comfortable with optimum height, width and length. The benches have in-built sinks. There are drawers under the benches and trolleys where documents and reports can be stored. The surface of the benches is made of stain-free material.

Staff in the laboratory:



The technicians do all the documentation and paper work; no separate staff is employed for this purpose. They also undergo regular in-service training to keep them updated regarding latest developments in technology and quality control.

BLOOD BANK

Blood bank flow pattern:

Blood donor comes to the reception.

↓

Completes the donor questionnaire and consent form.

↓

Sent to the screening room (for measurement of blood pressure, weight, pulse). The doctor examines the donor for medical fitness.

↓

Sent to the blood donation room.

↓

The hemoglobin level of the donor is checked (acceptable range is between 12.5 and 18 mg/dl).

↓

Donor is seated on a couch; about 350-450 ml of blood is taken from the donor at one time. If red blood cell aphaeresis is required, the Alyx machine is used. This is placed next to the couch. With the help of this machine, red blood cells are separated and the rest of the blood goes back into the donor's body.

↓

He donor is then sent to the refreshment room and kept under observation for about 15 minutes.

↓

If the donor is fine after about 15 minutes, he is sent back.

Staff in the Blood Bank:

i. 1 HOD blood bank
ii. 1 Chief Medical Officer
iii. junior resident on call
iv. 1 transfusion safety officer (TSO)
v. 1 supervisor
vi. 9 technicians
vii. 2 nurses
viii. 4 GDAs

The TSO monitors the entire process of issue of blood from the blood bank till it is transfused to the patient.

The supervisor manages the duty of the technicians and stock management.

Working shifts: There are two working shifts-

Staff in the first shift comprises of one GDA, one nurse, one resident doctor on call and one technician. The second shift has the same staff except that there are three technicians.

Services provided in the blood bank:

- Cross-matching
- Antibody screening
- Antibody identification
- Blood product separation

Procedure manual:

This has a description of all the policies and SOPs to be followed in the blood bank. These manuals are reviewed every two years.

The books available for reference in the blood bank include:

- Technical manual (from the Directorate general of Health Services, Government of India)
- Manual of American Association of Blood Bank (AABB)
- British guidelines for Blood Banks
- NACO guidelines for blood donors

The blood bank also has a nursing staff procedure manual, which contains information on topics like identification of blood specimens, procedures for transfusion and investigations for transfusion reactions. The equipments constitutes:-

- Platelet agitators
- Weighing machine
- Plasma expresser
- Room temperature thermometer
- Optipace (to separate white blood cells)
- Blood bank refrigerators
- Refrigerator centrifuge
- Quarantine blood storage refrigerator (2-6 degree centigrade)
- FFP (fresh frozen plasma) storage deep freezer (temperature maintained at –80 to –86 degree centigrade)
- Cryo-bath
- Crash cart
- Alyx machine (for red blood cell aphaeresis)
- Blood agitator
- Emescal agitator (for platelet and plasma aphaeresis)
- Cards available in the immuno-haematoloy / serology:
  - Coomb's card: for cross-matching
  - Neutral card: for donor reverse grouping
  - Newborn's card: for an infant less than four months of age
  - Donor card: for forward grouping
  - Patient blood grouping card
- Centrifuge
- Clot activator
- Anti-sera refrigerator
- Dry heating water bath
- Electro - luminescence testing (for hepatitis, HIV, HBV, HCV, VDRL)
- Hot air oven
- Autoclave

The blood bank refrigerators and deep freezers have an alarm system for high and low set points and open doors. If the refrigerators are not functioning, the blood stored is immediately shifted to iceboxes that are always kept ready and then to another refrigerator.

All reagents used in the blood bank are labeled with details of their contents and the expiry date. These reagents are inspected daily.

Specimen collection:

The positive patient identification is secured with the help of donor questionnaire at the reception.

↓

All the blood samples collected are labeled with patient identification number and also date and time of collection and computer identification of the technician drawing the blood sample.

↓

The samples are then tested for Hepatitis, HIV, VDRL and malaria parasite in the blood bank itself.

↓

After the above tests are done, the blood samples are kept for a week.

↓

If not used during one week, the samples are discarded.

Quality assurance: internal and external quality assurance procedures are followed.

Immuno-haematological procedures: All observations of the tests conducted are recorded properly at the time of the test itself.

All the control specimens are also tested in the same manner and by the same personnel, as the samples from the patients.

Cross-matching:

The technician does a forward cross matching using donor's blood and then reacting, it with antibodies.

Another technician verifies the above result and a third cross checks it.

Records:

i. The records for the past five years retained, which contain information about:
ii. Blood received from outside sources,
iii. Results of all the blood typing and cross matching done,
iv. Details of all blood and blood products issued to the patients (a sign out sheet containing details like date, time and person to whom blood is issued),
v. Transfusion records,
vi. Bacteriological studies (when indicated).

Blood component modification:

i. The blood components available in the blood bank include:
ii. Whole blood,
iii. Packed red blood cells (RBCs),
iv. Fresh frozen plasma (FFP),
v. Cryoprecipitate, and
vi. Platelets.

Granulocytes, bone marrow and / or blood progenitor cells and irradiated blood and blood components are not available.

CENTRAL STERLISATION SUPPLY DEPARTMENT (CSSD)

It is the manufacturing unit for sterile products.

Location:

It is located in the basement of SBAMI.

It receive supply from OTS, ICUs, casualty, Cath lab, HDU and IPD.

There is no separate lift for CSSD. No separate trafficking of CSSD supply to various depts.

Flow chart from receipt to issue:

Reception counter (receive the supplies)

Washing

Drying

UV light decontamination

Packaging

Autoclaving

Sterile storage zone

Supply to different depts.

Objective:

To acquire contaminated medical devices proposed for sterilization and supply sterile packs to the end use.

Medical device for reprocessing includes

- Surgical instrument
- Multipart instrument
- Microsurgical instrument
- Dental instrument
- Surgical motor system
- MIS instrument
- Rigid endoscope
- Respiration system
- Stainless steel implants
- Titanium implants

Sterilization:

Modern definition of a sterile goods do not specify the absolute absence of biological activity but determine aseptic condition with the certain probability.

-This probability is called Sterility Assurance Level (SAL)

- As per European standard EN 556, the minimum acceptable SAL is 10,00,000 CFU/part

Engineering Department:

This department deals with the following department of SBAMI.

1) Electrical
2) HVAC
3) Plumbing
4) Elevators
5) Fire fighting system

Electrical:

The electricity supplied by BSES is high tension (HT) electricity of 1100 kva which is converted into low tension (LT) 410 v and then supplied for use.

There is also UPS back-up for critical areas and it sustains for about 25 minutes

There are also diesel run, Digisets which can generate 1000 kva electricity almost at par with the BSES supply, which again has to be converted into low tension (LT) 410 v for general hospital use.

Heating Ventilation and Air Conditioning (HVAC):

There are three chiller plants that supply AC to the hospital. The HVAC system of the hospital is controlled through BMS from HVAC plant station, which by the click of the mouse control's the AC supply to any part of the hospital.

The gas used in the chiller plant is Freon (R134)

For hot air, hot water is sent through Air Handling Unit and for cold air cold water is sent through the AHU.

There exists motorized valve, therefore when a command is given through BMS, the motorized valves operates accordingly by letting hot water flow for hot air and cold water flow for cooling.

After certain interval period fresh air is automatically pumped in to maintain proper oxygen level.

Operation theaters are supplied with 100 % fresh air and are fitted with HEPA filters.

Plumbing:

Water is supplied by Delhi Jal Board (DJB) and SBAMI has the capacity to store up to
2 lacs litres of water at a time.

There is also a water recycling plant and the recycled water is used in HAVAC system, cooling tower and gardening purposes.

There is Double Reverse osmosis plant to supply water for the dialysis department.

Elevators: Lifts are fitted with automatic rescue device (ARD), by which if there is sudden no electricity supply, than those trapped inside the elevator can come out with the help of the ARD. The ARD is a battery powered one time use device for that particular event which maneuvers the lift to open at a lower floor. The ARD battery recharges automatically for next time use.

Fire Fighting System:

The fire fighting system involves
- Smoke detectors
- Heat detectors
- Sprinklers

Smoke detectors are activated by smoke particles about the size of 9 peco microns, it is an electronic process and it gives warning by activating the smoke siren.

Similarly the heat detector gets activated at 65 degree Celsius. It is also an electronically activated process and warns through heat siren.

The sprinkler bursts at 65 degree Celsius, it is a mechanical process for extinguishing fire. The water pressure is at 5 kg

There is a 2 lakh liters three portioned fire water tank which stores water, the water supply from DJB can only be taken to the fire tank as per Govt. rule.

An automatic generator is always on emergency task to supply electricity to the fire pump in case the electricity fails from external.

Pharmacy

Pharmacy supplies various medical goods like, medicine /syringes /dressing material/ etc, according to patient wise or department wise but the bulk of its activity lies in supplying medical goods, patient wise.

PROCESS:-

The pharmacy receives the daily requirement orders which are placed on HIS.

- a printout of the requirement list is taken out
- the pharmacist gets the medicines etc
- the medicines etc are put in a bag and the printout stapled with it
- GDA/pharmacy staff dispatches the medicines to its correct destination

Department wise certain life saving drugs/dressing materials/ointments are supplied.

PART – II

“Dissertation on the study of Improving Waiting Time in Radiology Department”

TABLE OF CONTENTS

INTRODUCTION

GENERAL OBJECTIVE

SPECIFIC OBJECTIVES

RATIONALE OF THE STUDY

REVIEW OF LITERATURE

METHODOLOGY

DATA, TOOLS AND ANALYSIS

REPORT

RECOMMENDATION

REFERENCE

ANNEXURE

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 specialties which cannot practice effectively without its support. The term radiology incorporates X-ray, USG, CT scan, MRI, DSA, PET etc. Thus the scope lies in the diagnosis and treatment of disease through the use of radiography, fluoroscopy and radioisotopes etc.
Of all the facilities such as X-ray, Fluoroscopy, Ultrasound (USG), CT scan, MRI and Nuclear Medicine in place, however crowding is seen mostly in front of X-ray department, which gives the rise to the necessity to conduct a study on this project.
Location:

- The radiology department should be easily accessible to the OPD, Casualty and IPD, that it should be designed for conveniently approachable from the user departments and thus preferably be suited on the ground floor.
- Flexibility, expandability and upgradability need be kept in mind while building the department.

Space requirement:

- Lack of adequate space results in needless waste of effort and time.
- The table shows recommendation of WHO / Mc Glibony and SBAMI **w.r.t** them.

WHO		Mc Glibony		SBAMI	
100 beds	65sqm				
200 beds	175sqm	200 beds	2000sq ft		
400 beds	500sqm	400 beds	4000sq ft	400 beds	370sqm
500 beds	650sqm				
750 beds	800sqm				

Space distribution:

- It includes areas like:
- Reception and waiting area
- Record room
- Radiologist office
- Darkroom
- Radiography rooms
- Control booth

Staffing: Recommended for 500 bedded hospital.

- Radiologists
- 1 consultant
- 2 senior specialists
- 3 junior specialists
- X-ray technicians : 8 (including 3 shifts and leave reserves)
- Darkroom assistants: 4 (3 shifts)
- Staff Nurse : 1
- GDA : 4 (3 shifts)
- Record clerk : 1
- Receptionist : 1

Location: - X-ray department at SBAMI

The X-ray department is situated in the ground floor and is easily accessible to the OPD, Casualty and the inpatient wards. The provision of rooms for technical functioning consists of:-

- Radiologist room (1)
- X-ray rooms (2)
- Darkrooms/auto processing room
- Film store
- X-ray record room
- Viewing gallery and conference room
- Film drying room
- Barium room
- Staff locker room.

Design of the waiting area

The department although situated in the ground floor and easily accessible to the OPD, emergency and inpatient ward, it is certainly a little short of being called convenient due to the following reasons :-

- No scope of flexibility and expandability at a later date.
- Inadequate reception and registration area, plus within the same area typing and dispatch of reports done.
- Crisscross of traffic.
- No separate waiting space for seriously ill patients.
- The waiting area consists of railing chairs along the walls which are much less compared to the patient holding capacity, resulting in a cramped environment.
- No drinking water facilities in the waiting area.
- No TV or reading materials for comfort of patients.
- The waiting area is fully air conditioned.

Staffing
The staffing pattern of radiology department at SBAMI constitutes the following:-

- Radiologist - Consultant-1
  - Junior consultants-2
- Radiographers - 8 in number (including 3 shifts and 1 radiographer in Printing)
- Dark room assist. - 4 (3 shifts)
- Attendant - 2 ward boy round the clock
- Record clerk - 1
- Receptionist - 1

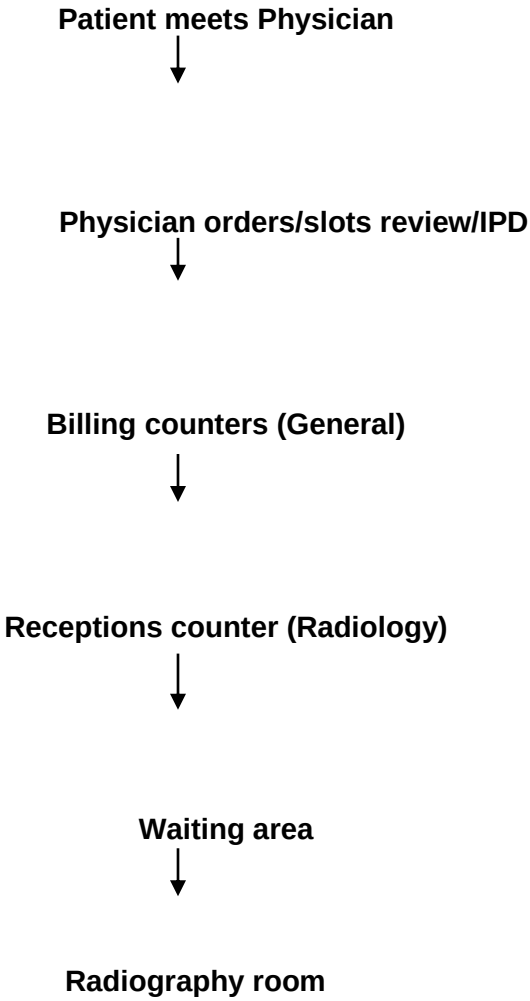
X-Ray Machines

Digital CR system – 2 X-ray stationed (one for chest x-ray and one for all other purpose)
4 portable

General Standard/Activities at SBAMI

- Patient satisfaction level: 85%
- TAT: 15 min , as per SBAMI standard
- Average patients getting X-ray done /day : 150
- Holding capacity of patients at X-ray deptt: 70

The Overall Flow process



OBJECTIVES:-

General objective:

To improve the waiting time of patients visiting the X-ray department.

Specific objectives:

1. To measure the processing time from registration till the patient gets the X-ray done.
2. To study the effect of designing of radiology department on waiting time.
3. To study the impact of staffing pattern.
4. To recommend the specific measures to reduce the waiting time in radiology department

RATIONALE OF THE STUDY

This study is being conducted due to overcrowding in the X-ray department and thereby increased waiting time of the patients. So that suitable recommendations can be suggested. Also no scientific studies on radiology department have been done earlier at SBAMI. Thus this study may contribute to unknown findings so far and help in better management of radiology department.

REVIEW OF LITERATURE

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 [1]

The patient population contributes to congestion, in light of these issues an innovative program is being trailed at Burnaby hospital for shortening of the duration of time between patient presentation and treatment, and an increase reported levels of patient satisfaction[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 simultaneousl[3]

Elevated waiting times appeared as the unique independent risk factor of patient dissatisfaction. Information on delays and reasons for this delay could be systematically communicated to attending patients and it could be an effective strategy to reduce perceived waiting times and improve patient satisfactio[4]

Our objective was to reduce the 'did not attend' (DNA) rates and waiting times by introducing a new confirmatory appointment system prior to their attendance at both Hartlepool and Middlesbrough, like previous day appointment confirmation.[5]

METHODOLOGY

- For a study to have statistically significant result, choosing an appropriate sample size is crucial. But due to time constraint the **sample size was limited to 60** although initially the idea was to keep it to a bare minimum of 30.But in an attempt for a better homogeneity and improve the quality of data a further 30 has been added within the cramped time although a minimum 100 samples would have derived a better conclusion.

- The method of sampling is convenient type sampling and the data collected are of patients arriving from OPD, IPD and emergency.

- The tool used here is a 5 set closed ended questionnaire.

- The data collection starts at the Registration counter and culminates with the patient getting the x-ray done.
    - Emergency patients get directly into the chamber.
    - Patient at the registration counter is noted as **Patient arrival**.
    - Patient entering the X-ray chamber is noted as **Patient in.**
    - **Exit time** is taken from the monitor as soon as the session is over.

- Average was found out using Excel-sheet.

- Data analysis is done using Excel-sheet and appropriate relations between variables were examined

FINDINGS AND DISCUSSION

- **Mean (average waiting time) = 20 min(Approx.)**
- **UCL (upper control limit) = 84 min**
- **LCL (lower control limit) = 2 min**

- **A majority of 83% patients came through appointment.**
- **75% complained of inadequate staffing.**
- **75% gave the lowest remark on behavior.**
- **57% of patients were in the time slot within 15 min.**
- **75% of the overall rating was given the lowest remark.**
- **51% of the patients were on time.**

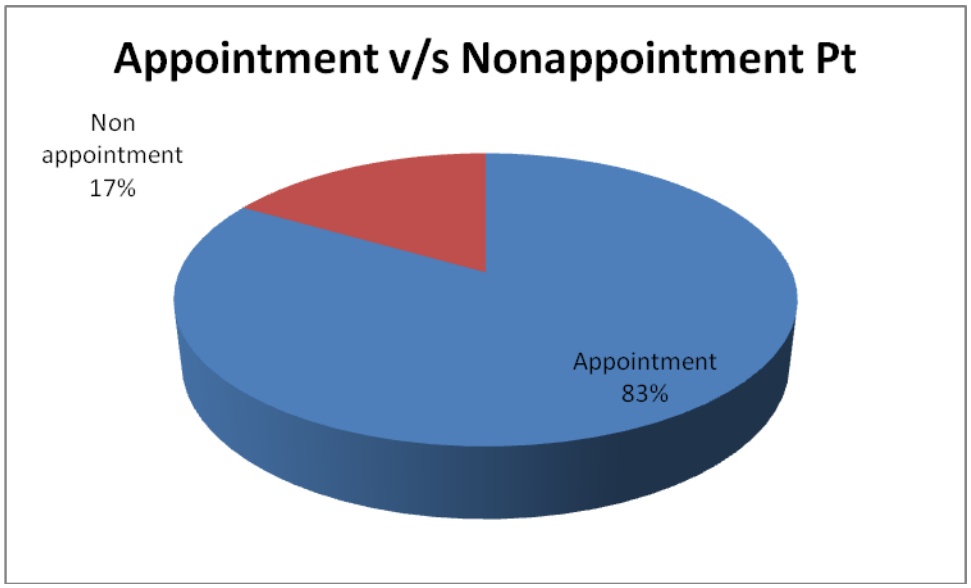


Fig.No- 1 showing the distribution in percentage terms of patients having appointment v/s non appointment

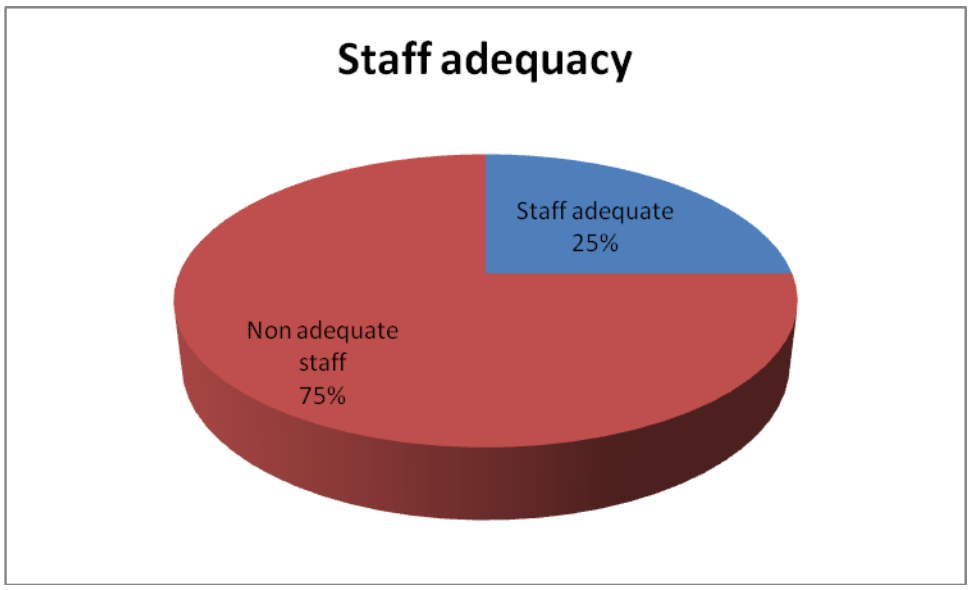


Fig.No-2 Showing distribution in percentage terms of staff adequacy from Pt. survey.



Fig. No-3 Showing distribution in percentage terms regarding staff behaviour from Pt. survey.

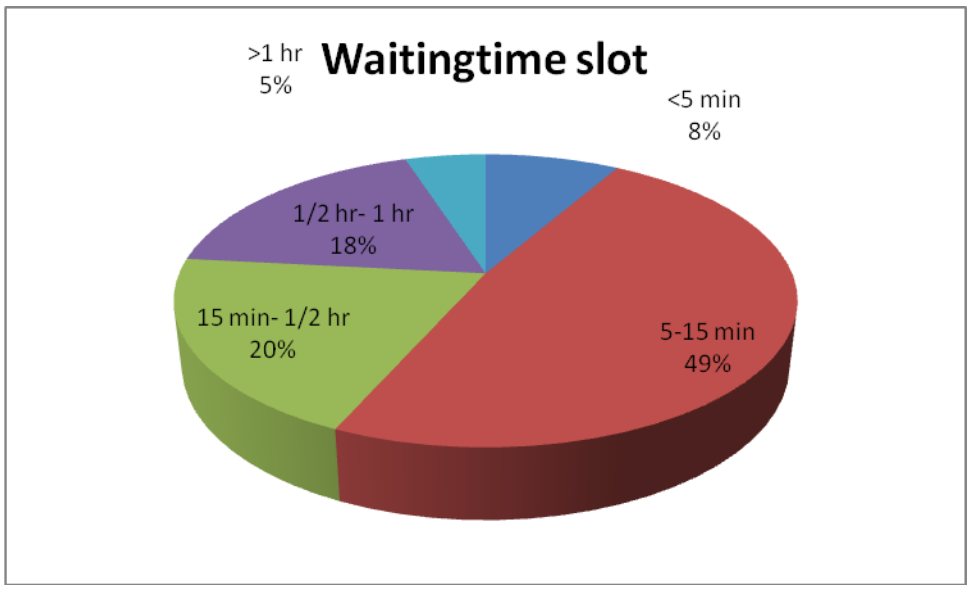


Fig.No-4 Showing distribution in percentage of various waiting time slot.

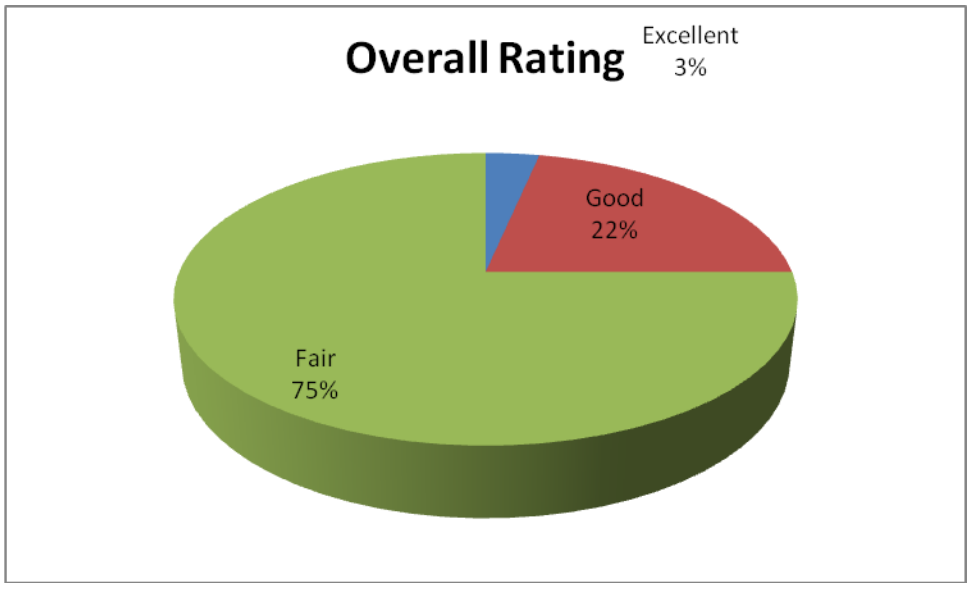


Fig.No-5 Showing distribution in percentage of overall rating as given by patients/attendants.

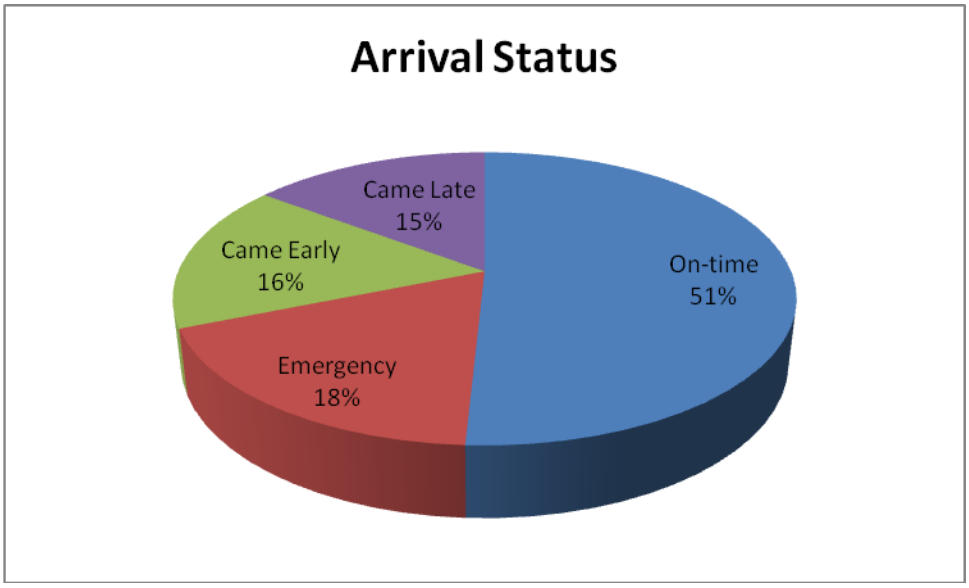


Fig.No- 6 Showing distribution in percentage about the arrival status of patients.

Discussion:-

- The average waiting time of 20 minutes is more than the SBAMI standard of TAT which is 15 minutes. Thus there is a time lag of 5 minutes.

- The Upper Control Limit of a patient was found to be 84 minutes, the patient arrived on time. Yet, the reason behind this long waiting was due to the reason that there was an ERCP procedure going on.

- The Lower Control Limit was found to be 2 minutes in four cases, and in all the four cases they were Emergency patients

- Staff inadequacy 75% directly corresponds to the poor staff behavior 75%.

- Staff adequacy of 25% nearly corresponds to the 17% emergency patients. As emergency patients don't have to wait and are given priority, therefore they cannot know if there is any dearth of staff.

- 57% of patient fall very well within the TAT of 15 minutes (SBAMI standard).

- 51% of patient arriving on time nearly corresponds to the 57% of patients with waiting time within 15 minutes. That is patients coming on time are very well adjusted within the waiting period of 15 min.

CONCLUSION

The points concluded are:

- Overcrowding leading to increase in waiting time.
- Under staffing of class IV employees
- Waiting area is short of space.
- Poor communication skills of the staff members.
- Reception and registration area is compromised as within the same space typing and dispatch of reports are also done.
- Criss-cross traffic.
- Inadequate sitting arrangements.
- Lack of public utility services like drinking water, reading materials or television
- Consultant turn up for special radiological examinations without giving any prior notice.

RECOMMENDATIONS

With an aim to better the existing waiting time, SBAMI on its part of Quality Initiatives and Objectives commitment to continuous improvement loop, can implement certain recommendations to reduce the time lag.

1) Increasing manpower by allotting two ward boys specifically for (a) take the film to the processing room and (b) the second boy to bring in the patient and shift the patient to the table. Because currently the technician does the x-ray and takes the film to the processing room and upon returning back also shifts the patient to the table.

2) Hospital management be run as per the scientific hospital administration techniques to bring more revenue to the hospital

3) Patients may be asked to be on time with respect to the given appointment time slot.

4) Patients should not be encouraged to arrive at the X-ray center much ahead of the given appointment time, also this will help in giving the waiting area a calm look.

5) Advance information should be intimated to appointment patients over phone, in case some lengthy procedures gets added up in the schedule, so that they don't have to end waiting up in the hospital.

6) Patients could be requested to intimate the hospital in case of their inability to come, so that the same time slot could be adjusted with others.

7) Gastroenterology deptt. Generally comes up for an ERCP procedure without any prior appointment and in the process consumes up to 2 hrs. They can asked to seek for an appointment earlier for any such procedure so that there need not arise a sudden increase in waiting time.

8) For special procedures like ERCP, IVP, Barium meal, HSG, RGO/MCV block appointments to be done and intimated earlier..

9) Non-appointment patients should be seen only after appointment patients.

10) Strict time discipline should be maintained and appointment patients should always be priority.

11) The patient next in waiting may be intimated to get prepared in the dress changing area at an appropriate time and get in as soon as the earlier patient comes out.

12) Patients may kindly be asked to remain seated in queue and not leave the premise without intimating the staff members.

13) Patients excess the waiting capacity may be asked to be seated in the large general waiting area and may be called in when the sitting capacity permits.

14) Provide drinking water at the waiting area.

15) Reading materials, newspaper to be made available at the waiting area.

16) TV sets can be placed at specific location in the waiting area.

REFERENCES

1) “Decreasing extremities in patient waiting time” by Groome LJ, Meyeaux EJ Jr, (Quality Management Health Care-2010)

2) “Shortening the wait” by Finamore Sr, Turris SA

3) “Reducing Patient waiting times and improving resource utilization” by Santibanez P, Chow VS, French J, Puterman ML

4) “Waiting time and assessment of Patient satisfaction” by Pitrou I, Lecourt AC, Bailly L, BrousseB.
(Epidemology and public health deptt.Rouen, France)

5) “Reducing waiting times by appointment system” by Tayal SC, Opaneyc AA, Crinious.
(James Cook University, UK)

ANNEXURE

CR NO.

NAME :

DATE:

SEX :

1. Whether coming through appointment?
   - Yes
   - No

2. Were there enough staff members at the reception to take care of patient and his/her attendants?
   - Yes
   - No
   - Sometimes

3. Behavior of staff in handling the queries of patient and his/her attendants?
   - Excellent
   - Good
   - Fair

4. Waiting Time?
   - Less than 5 minutes
   - 5 minutes – 15 minutes
   - 15 minutes – ½ hour
   - ½ hour – 1 hour
   - More than 1 hour

5. Overall how the patient and his/her attendants felt about the services provided by the Hospital?

- Excellent
- Good
- Fair