Summer Training at
Narayana Multispecialty Hospital, Jaipur
(April 1–May 31, 2014)

TAT in Radiology Department (CT & MRI)

By
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Under the guidance of
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MBA- Hospital & Health Management (MBA-HM)
2013-2015

The IIHMR University, Jaipur
2014

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CERTIFICATE

This is to certify that **Dr. Shweta Choudhary** has undergone her summer training in Narayana Multispecialty Hospital, Jaipur from 1st April, 2014 to 31st May, 2014.The candidate herself carried out all the studies related to her summer training. Her approach to the study has been scientific and analytical. The summer training is partial fulfilment of the course requirement recommended for the award of Post Graduate Diploma in Hospital and Health Management.

I wish her success in all her future endeavours.

Col. (Dr.) Ashok Kaushik
Dean (Academic & Student Affairs)
IIHMR Jaipur

Dr. Shilpi Mishra Sharma
Assistant Professor
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NH Narayana™
Multispeciality Hospital
Unit of Narayana Health

NH/HRD-Off/2014/246 **Date: 2nd June, 2014**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Shweta Choudhary** from Institute of Health Management Research, Jaipur has completed her Summer Training Successfully in Narayana Multispecialty Hospital, Jaipur from 1st April, 2014 to 31st May, 2014.

Her Work during the Period was Commendable and appreciable. Her character and conduct was good.

The project was on "TAT in Radiology Department (CT & MRI)"

We wish her success in her future endeavors.

For Narayana Multispecialty Hospital, Jaipur

NARAYANA HRUDAYALAYA PVT. LTD. JAIPUR

Vishnupriya Sharma
Sr. Manager-Human Resources

Now, Narayana Hrudayalaya Hospital, Jaipur will be known as Narayana Multispecialty Hospital, Jaipur and this change is supported by a new logo. However, all legal agreements will continue to be in the name of Narayana Hrudayalaya Pvt. Ltd. The legal entity has not changed. This is only a brand change.

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ACKNOWLEDGEMENT

I feel deeply privileged in expressing our deep sense of gratitude to **Dr. Devi Shetty**, **Dr. Ashutosh Raghuvanshi, Dr. Mala Airun**, **Mr. Arunesh Punetha** Narayana multispecialty hospital, jaipur for their expert guidance and encouragement which immensely helped in the process of making this report. Without their support, exploring such a vast organization could not have been possible.

I would like to express my deep sense of gratitude to **Dr. Manikant jain, Ms. Neeta singh and Ms. Gargi consul** who guided and gave this project.

I would also like to express my heartiest gratitude to **Dr. Shilpi Mishra** for their guidance and help throughout my work. I would not have been able to get so much knowledge and experience about the work, analyzing the data preparing the report without her kind support and guidance.

I would like to special thank to the doctors, nurses, housekeeping and patients of the Narayana Multispecialty hospital, jaipur.

I would also like to express my gratitude to my institute **IIHMR** which gave me such an opportunity to work and give chances to learn.

I would also like to thanks to my parents for their blessings and my friends who motivated me and helped for my accommodation.

I again express my heartiest gratitude to all the persons who helped me throughout my work.

Dr. Shweta Choudhary

TABLE OF CONTENTS

S. No. Contents Page no.

Acronyms/Abbreviations:

ANC – Antenatal care

CCA – Critical care assistant

CT- computed tomography

HK- House keeping

ICU – intensive care unit

IPD- In patient department

ITU – intensive thoracic unit

JCI – joint commission international

MRI- Magnetic resonance imaging

MRN- Medical record number

NH – Narayana health

NICU – neonatal intensive care unit

OPD- Out patient department

OT – operation theatre

PHC- Preventive health checkup

PICU – pediatric intensive care unit

TAT- Turnaround time

Executive Summary

Hospital being a consumer oriented industry, the major focus has always been on patient satisfaction. Patient satisfaction is influenced by a lot of factors, among which one of the most important is turnaround time (TAT). A simple definition of TAT would be the period for completing a process cycle such as admission process, discharge process and report dispatch etc. and this is expressed as average of previous such periods.TAT is also a quality measuring parameter for any department. It has been stated that the TAT is the most noticeable sign of performance to clinicians, drawing comments immediately when prolonged and going unnoticed when adequate. Measurement of TAT is a measure of efficiency and can highlight variations in processes so that these variations can be improved. Thus hospitals set the benchmark regarding the TAT's for various processes and the department and work on every point that causes the delay. Thus improving the quality which in turn improves patient satisfaction. This report deals with the finding out the TAT of department of Radiology (CT Scan and MRI) and then identifying the bottle necks, thus giving workable recommendations for the improvement of the same.

SECTION – A

1) Objective of Internship:

- To complete my internship with full efficacy and efficiency.
- To understand working of whole of the hospital and to seek opportunity that will stimulate me and provide real experience.
- To groom myself as a professional personality.
- The primary objective of intern program is to provide a student interested in the field of hospital working, some experience and knowledge on the management and operations of a hospital.
- To accomplish the objective the student is expected to participate in a variety of activities. The duties require significant involvement in management activities. All responsibilities require the ability to work effectively with co-workers and to meet and work well with the public.
- I was introduced to the working of the hospital's quality department. This provided me with information valuable in future employment decisions as well as other benefits.

2) Daily Routine/ Management Work:

- Taking hospital rounds and assessing voice of customers (patients).
- To make quantitative analysis of the defects detected which is critical to quality.
- To study the critical control points affecting the process.
- To study the key elements of the process.
- To make improve in the process.
- To determine if the improvement is statistically significant not by chance.
- To control the improved process.
- Analysis and review of the prevalence of bed sore.
- Customer satisfaction rate of indoor patients.
- Waiting time analysis of OPD patients.

3) Managerial Tasks Performed:

- Billing of patients seeking critical care by critical care team in ICU.
- Proper maintenance of documents in the patient files.
- Documentation of files and registers ICUs.
- Usage of colour coded stickers for infected patients.
- Interaction with floor – coordinators to study the existing process flow of the organization.
- Discussed with the top management about the defect in the process.
- To be a part of the process improvement.

4) Learning's:

- Hospital information system (HINAI) and its integration with other departments.
- Enhanced the skills in Microsoft office tools, learned versioning of a document.
- Department manual for all departments in hospital.
- Presentation skills and organisation meeting exposure.
- Medical ethics, medico legal laws and medico legal cases.

5) Organization Profile

Narayana Health, one of India's largest and World's most economical healthcare service providers is set to emerge as a global industry model for its ability to reconcile quality, affordability, scale, transparency, credibility and sustainable profitability. Equipped with all super-specialty and tertiary care facilities that the medical world has to offer, it is now a one-stop destination for any healthcare requirement a common man needs. No one is refused treatment due to lack of funds. From a humble beginning of a 300 beds hospital in 2001, Narayana Health has grown to a 6000 beds health care conglomerate in 2013 with 17 hospitals present in 13 locations within the country.

Famous for its cost-cutting approach in many ingenious ways, NH has been ranked 36th among "WORLD'S 50 MOST INNOVATIVE COMPANIES" by Fast Companies in2012.

In India, where accessibility to good healthcare facility still depends on one's economic status Dr Devi Shetty founder of Narayana Health bring a revolution in the health sector.

Vision-

To provide high quality healthcare, with care and compassion, at an affordable cost, on a large scale.

Values-

Narayana Health's Core Values are defined by **I – CARE**

Innovation and efficiency – to continuously reduce cost of delivery of high quality health care and improve reach

Compassionate Care – in providing accessible care that makes a difference to our patients

Accountability – to honor our commitments with integrity and transparency to our patients, employees and investors

Respect for all – recognize the contribution of every employee and respect rights and dignity of every patient and employee

Excellence – create a culture of individually excelling to collectively ensuring highest quality of consistent, reliable service to our patients and sustainable value to all our stakeholders

Brand……

Narayana Health:

NARAYANA in sanskrit means the preserver of the universe which matches with the NH ethos of being committed to the health of every life

Colour:

BLUE is the colour of calm, peace and cure… Leaf is a symbol of life

NH:

NH does not have any gaps in between as there is no space for discrimination while catering to the health needs of every individual

3 Leaves:

The THREE LEAVES three core values of NH – Compassion, Quality, Affordability

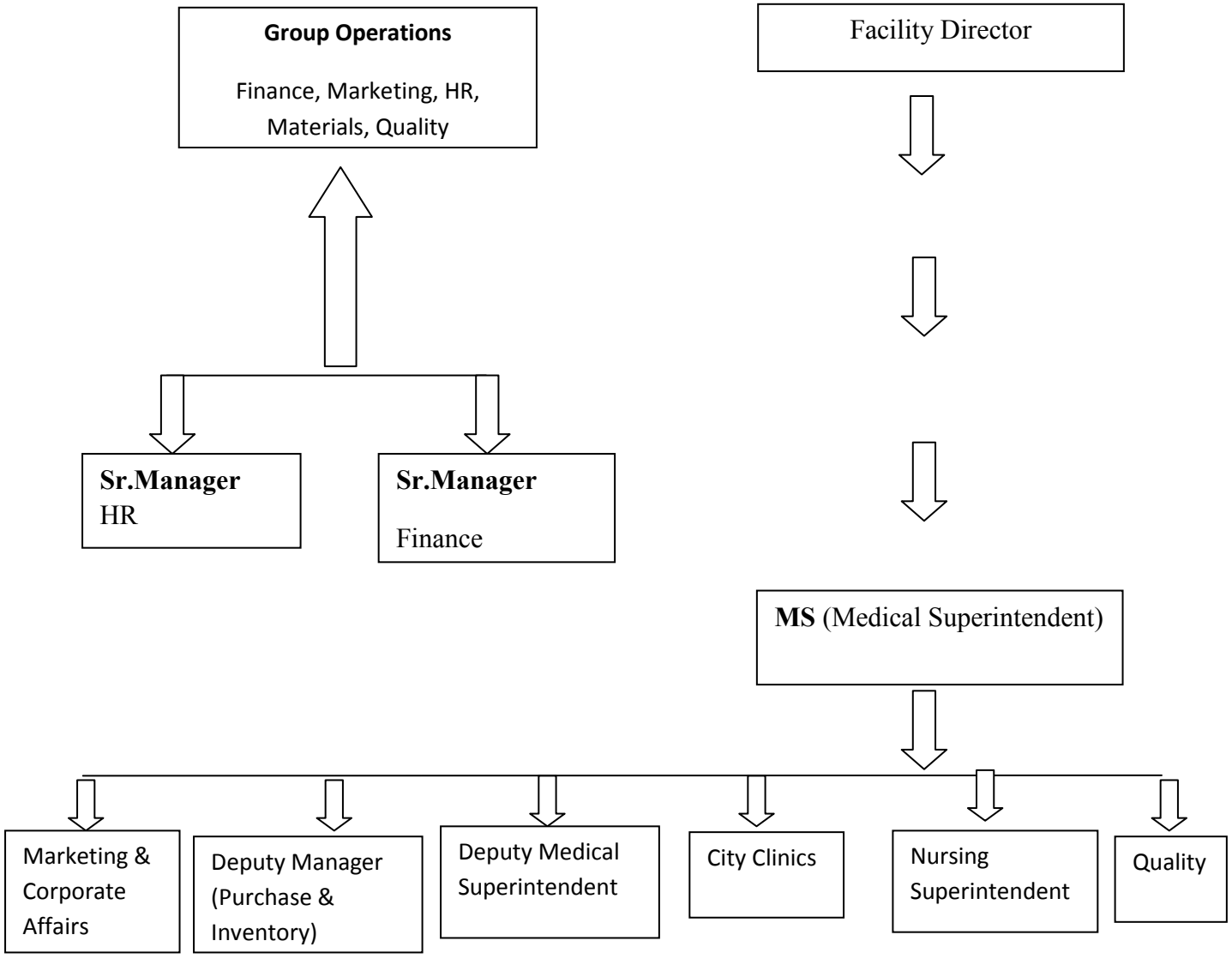
Sunrise:

The SUNRISE behind the letters NH marks a new dawn in healthcare that Narayana Health is trying to bring about

Narayana Multispecialty Hospital, Jaipur

Narayana Multispecialty Hospital, Jaipur was commissioned on 29th of January 2011. In 26 july 2012, the hospital was awarded the international accreditation from Joint Commission International (JCI) making it the first hospital in Rajasthan to receive this prestigious recognition. The 200 bed multispecialty tertiary care hospital is located at Pratap Nagar within a sprawling campus of 4.7 acres. Specialties at the hospital include both adult and pediatric cardiac services, orthopedics, obstetrics & gynecology, neurosciences, nephrology, urology and gastroenterology offering advanced treatment procedures including Laparoscopic and Minimally Invasive surgeries. Hospital has in-house Radiology, Laboratory and Blood Bank services offering Emergency and Trauma care.

ORGANIZATIONAL STRUCTURE



DEPARTMENTS & SERVICES:-

1. Cardiology and cardiac surgery
2. Neurosciences
3. Nephrology and urology
4. Gastroenterology
5. Orthopedics and joint replacement
6. Trauma care and emergency services
7. Critical care
8. Mother and child care
9. Pulmonary medicine
10. plastic surgery, cosmetic& reconstructive surgery
11. Internal medicine
12. Diabetes & endocrinology
13. Physiotherapy & rehabilitation centre
14. Nutrition
15. Radio diagnosis and imaging
16. Pathology & microbiology
17. Comfort, safety and supportive care
18. Solar water heater system

1. Outpatient Department

First come first basis depending upon the availability of consultant prior appointment can be taken from the inquiry and the time and date given by the receptionist and the patients details are recorded in the system. There are four decentralized O.P.D.:

1. North OPD
2. South OPD
3. Cardiac OPD
4. Nephrology OPD

OPD timings: 9 am to 5 pm, one physician available from 5 pm to 8 pm.

Average no. of OPD patients are 240 to 250 per day. (Including old and new patients)

2. **In Patient Department:**

- Male General Ward 1 & 2 – 16 & 19 beds respectively (Lower ground floor)
- MICU – 14 beds (Ground Floor)
- CCU – 20 beds (Ground Floor)
- Female General Ward – 34 beds (First Floor)
- ANC Ward – 8 beds with 2 beds in labor room (First Floor)
- Pediatric Ward – 7 beds (First Floor)
- NICU – 4 beds (First Floor)
- PICU – 5 beds (First Floor)
- ITU – 20 beds (Attached with O.T. on First Floor)
- Private/ Semi private Ward – 29 beds (First Floor)
- CTVS Male & Female Ward – 6 beds in each ward (Second Floor)
- Ortho Ward – 6 beds (Second Floor)
- Neuro Ward – 6 beds (Second Floor)
- HDU – 9 beds (Second Floor)

Function:

- To provide the highest quality of nursing and medical care to the patients.
- To provide necessary equipment, essential drugs required for the patient care.
- To provide facilities to needs of the visitors and attendants.

3. **Emergency services:**

Well equipped nine bedded triage supported by ICU where critically ill and trauma patients are attended in integrated manner. The hospital has a code blue team comprising of emergency physician, cardiologist, anesthetist, deputy medical superintendent, nursing in-charge and supervisor, all respond to emergencies such as cardiac arrest.

The distance between emergency triage, OT, cath lab, has been kept minimal for the speedy approach of facilities provided by the hospital.

Location: Lower ground floor

Entrance: Separate entry directly from the main road.

Emergency is divided in to 3 zone based on triage:

Red (Priority – 1)	Yellow (Priority -2)	Green (Priority – 3)
• Chronic self limiting disorder • Life threatening injury or condition which are critical • Survival with immediate treatment Eg. Respiratory Arrest	• Requirement of definite treatment but no immediate threat to life exists. Eg. Acute Abdominal Pain, Acute renal failure, acute asthmatic attack.	• Patient having minimal injury or minor condition and ambulation. Eg. Abrasion and superficial injury

Ambulance Services: Out sourced

Scope of services:

- Request for the use of ambulance services arises from the individuals, organization, and services provided are payable by the patient separately.
- Member of the community calling ambulance to the seen of accident or other emergencies.
- General practitioners, nursing homes arrange out patient booking of ambulance by telephone.

4) Operation Theater:

Location: First floor

Easily accessibility through lift to CCU, blood bank, Emergency and CSSD

ITU is attached to OT complex.

OT 4 & 5 - dedicated to Cardiac surgery

OT 3 dedicated to neuro and orthopedic surgery.

OT 1 & 2 for gynecology and general surgery

Manpower: Head of department, Anesthetist – 7, OT executive – 1, OT technician – 9, Perfusionists – 2, Nursing staff – 9, housekeeping staff – 4

No. of surgeries performed – 280 – 300 per month

5. Catheterization Lab:

Location: Ground floor

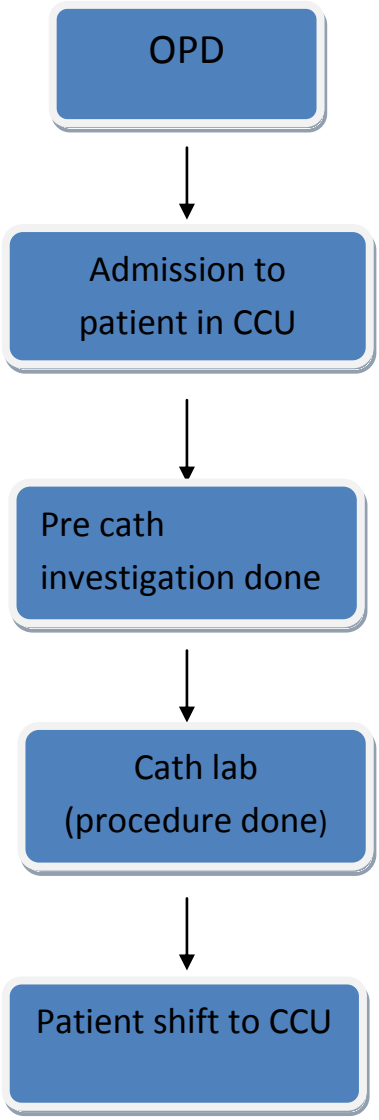
Functions: All invasive procedures are done in cath lab such as Angiography, angioplasty, Cath study, EP (Electro physiological) study ETC.

No. of procedures: 300 – 325 per month

Manpower: Cardiologist – 6 (4 Adult, 2 Pediatric), Executive coordinator – 1, Technician – 4, Staff nurses – 5, Housekeeping personnel – 4.

Duty Timing for staff: General duty 9am to 5 pm, morning shift 8am to 2 pm, evening shift 2pm to 8pm, night shift 8pm to 8 am.

Process flow:



6. CSSD (Central sterile supply department)

Location: Lower ground floor

Organogram:

CSSD incharge – 1 , Technicians – 3 and Clinical care assistance – 7

Total area is divided into 4 zones:

- Zone I (Dirty area): Reception, Inspection and documentation.
- Zone II (Clean area): Assembly and packing.

- Zone III (Sterile area): Sterilizing
- Zone IV (Issue area): Storage and distribution

Major equipment:

- Autoclave large (450Lt) – 2, Temp – 134^{o}C and pressure 2.5Kg
- Autoclave small (300Lt) – 1, Temp – 134^{o}C and pressure 2.5Kg
- Air Guns – 2
- ETO sterilizer – 1
- Packing machine/ Sealing machine – 2

Check for proper sterilization:

- Bowie dick test – Colour changes blue to black (Autoclave) Green (ETO).
- Leak test
- Sterilization test
- Batch monitoring test

After confirmation of proper colour change it can be only 50% assured that the instruments are sterilized. It is send to lab for microbiology testing for 100% confirmation.

If lab report is positive of bacteria, the instruments are again brought from the issued department and resterilized. Through out the entire procedure unidirectional flow is maintained. Provision of dumb waiters for exchange of items between CSSD and OT.

Functions:

- Cleaning
- Processing
- Sterilization of all instruments, treatment trays, dressing trays, etc

- It also helps in infection control process.
- It is responsible for optimum utilization of equipment resources of the hospital

7. Radiology department

Location: Lower ground floor

Areas:

- Reception area
- Console room
- Imaging services room
- Changing room-2

Different rooms for x-ray, mammography, MRI & CT scan

Services provided are:-

- Digital radiography, x-ray machines- 1, fixed machine 2, portable 1, automatic processor
- CT scan 64 slice
- MRI – 1.5 Tesla
- Mammography -100 MA power

8. Laboratory

Location: Ground Floor

Manpower: Consultant microbiology (1), Consultant pathology (1), junior microbiologist (1), lab technician (9), CCA (2), Housekeeping staff (2)

Services provided: Services related to biochemistry, microbiology, hemetology and histopathology.

Blood Bank: Attached with laboratory

Department dealing with collection , testing, processing, component separation, storage, preservation and issues of blood and its products for safer transfusion to patient as requisitioned by physician.

Location: Ground floor

Areas:

- Consultant room
- Medical examination and counseling area
- Donor room
- Serology room

Operational timings- 24 hrs, donation timings-9 am to 5 pm

Manpower: Incharge, lab technician (3), staff nurse (2), housekeeping staff (1)

9. Physiotherapy and rehabilitation centre

Well trained team of 6 physiotherapists managing the department and providing rehabilitation therapy for joints diseases, strokes, backache, trauma, etc

Other facilities:

- Wax therapy
- Hydro collator – hot pack
- Interferential therapy
- IFT - pain relief
- Ultrasound therapy-piezoelectric effect
- TENS - transcutaneous electrical & stimulation
- Muscle stimulator
- SWD-short wave diathermy (electromagnetic radiation) etc

10. Medical record department

Scope of services-

- Maintenance of all medical record
- Storage of record
- Maintenance of integrity and confidentiality of medical record
- Maintenance of medico legal certificates(MLC)
- Quantitative analysis of record
- Numbering and filing
- Completion of incomplete records

11. Food and Beverages and Dietetics

Contribute to recovery of health through scientifically prepared diets &education of the patient regarding use & utility of different food & balanced diet

Location: lower ground floor

Total staff – 54 - outsourced only packing and distribution, reheating if required its done in the hospital.

Nutritional assessment, menu planning, lasting of food and preparation of diet summary done by dieticians (3).

Type of diet – Total 15 most common are

- Normal full diet
- Soft diet
- Liquid
- Diabetic
- Renal
- Post cardiac surgery

Scope of services-

- To provide nutritionally well balanced food for all patients according to their needs
- To serve staff and patients attendants
- To help in improving patients health by serving proper, nutritious diet on order of dietician

12. Housekeeping department - outsourced

Responsible for activities aimed at maintaining the facilities, presentable, pleasant, comfortable and safe for people living or working within the hospital or visiting from outside. To provide clean and pleasant environment free from foul smell, infections this promotes early healing.

Total staff - 114

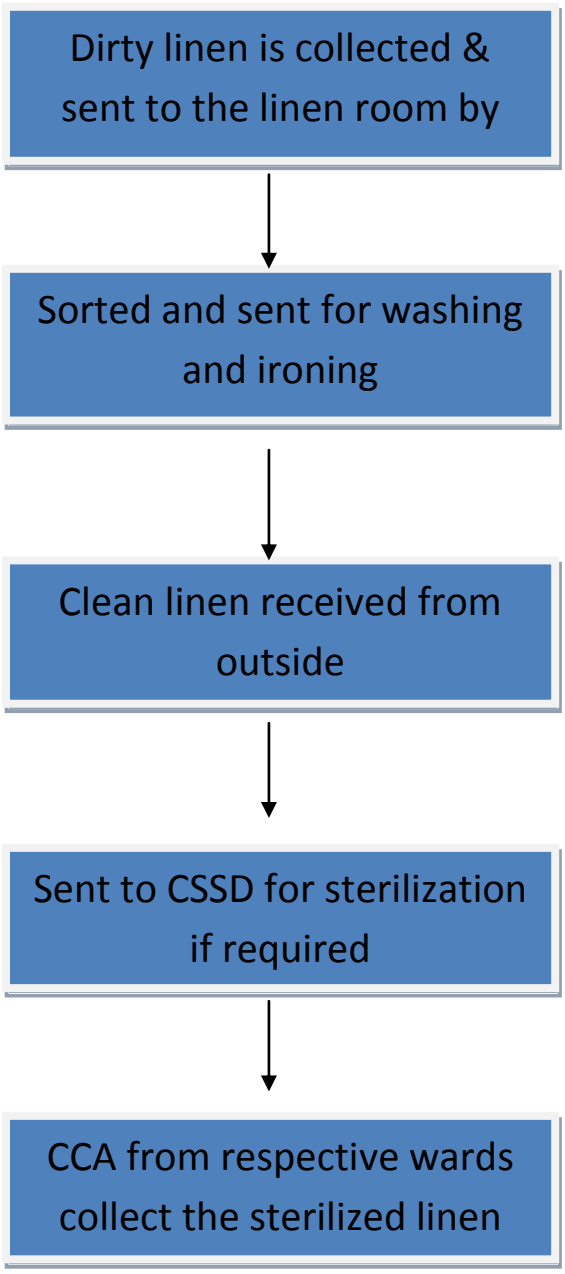
Duty timings morning - 7 am to 3 pm, evening -11 am to 7 pm, night-7 pm to 7 am

Functions-

- Maintaining of hygiene of the patient and hospital
- Helps in patient preparations
- Infection control
- Waste disposal

13. <u>Linen and laundry</u> - outsourced

Process:



Areas:

- Dirty area and clean receiving area
- Availability of colour coded polybags- orange foe infected, green for clean

14. Pharmacy department

There are three types of pharmacy departments in the hospital:

i. IPD pharmacy
ii. OPD pharmacy
iii. OT pharmacy

Functions of pharmacy

- Supply of drugs to admitted patients, wards, and various critical patient care units like MICU, CCU, OT and Emergency.
- Dispensing of drugs for out patients (functions of OPD pharmacy)
- Demand estimation according to formulary, in the absence of formulary, establishment of specification for drug procurement.
- Furnishing drug information to consultants and other professional staff.
- Quality control of drugs purchased and those compounded and manufactured pharmacy

Main store:

- **Location:** Lower ground floor
- Store receives all medicines, medical equipments, instrument consumables and other essential goods and printing & stationery material required by the hospital as ordered. It cross checks the items received from the receiving store and issues them to all pharmacies and other departments as further requirement.

15. Diagnostic services:

Location**:** Ground floor

Services offered:

- Ultrasonography
- Trademill test- 2 machines
- Electrocardiography- 1 machine

- Echocardiography – 2 machine
- Electroencephalography
- Uroflowmetry
- Electromyography
- Pulmonary function test

Manpower**:** consultant- 4, technician-5, executive-1, receptionist- 2, housekeeping staff-2

Operational timing: 9am to 5pm

16. Dialysis department:

Location: Lower ground floor

No. of beds: 20 beds (including 4 isolation beds), dialyser machine- 20

No of dialysis done per day: 45 to 50 per day

Shift for dialysis: 7am to 12pm, 12pm to 5pm, 5pm to 8pm

Manpower: consultant- 2, MO- 1, superviser-1, technician- 7, nursing staff- 3,

house keeping-2

Every patient is provided with meal, included in tariff and menu is predecided by dietician.

17. Mortuary:

Location: Lower ground floor

At a time 4 dead bodies can be kept. Temperature maintained is 5 to 6 degree celcius.

Scope of services:

- To keep the bodies of patient dying in the hospital, until the relatives claim them and arrange for their disposal.
- To keep dead bodies requiring pathological post mortem (in MLC cases).

18. Security services: outsourced

- The role of hospital security department is "to provide security service to all staff, patient and visitors and for protection of hospital property in the premises, through use of well trained personnel, technology and timely response to requests.
- Analysis of security threats and vulnerabilities in conjunction with the management, civil police and others.
- Control of movement of vehicular traffic within the premises.
  Total staff: 50, duty timings- 12 hours duty, morning- 8am to 8pm and evening 8pm to 8am.

19. Billing and finance department:

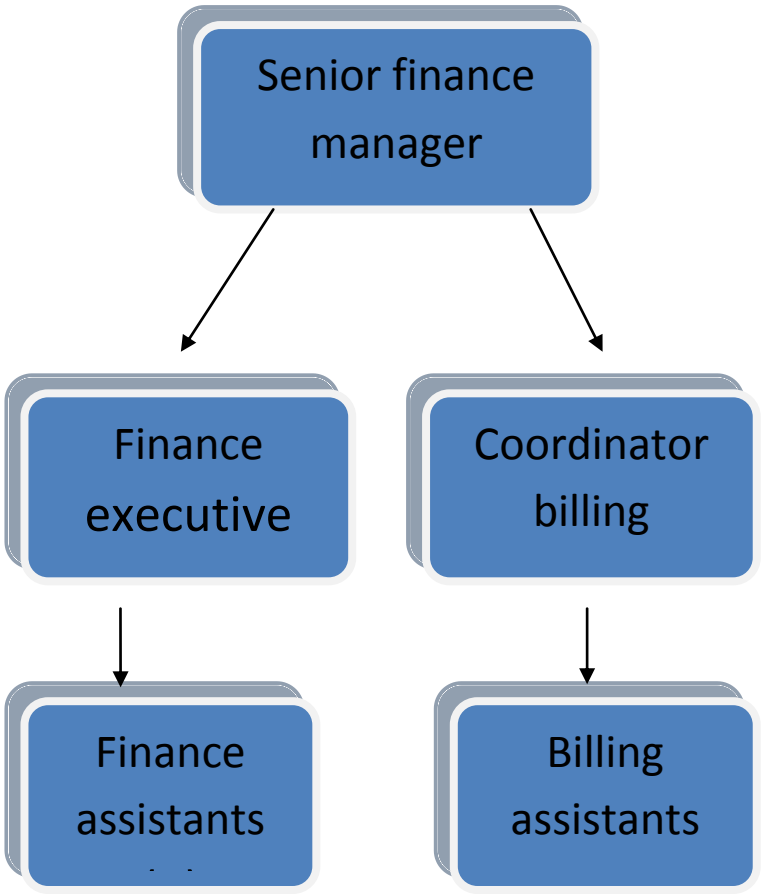
Location: Ground floor

Operational timing: 9am to 5pm- finance department, IPD billing- 24 hours.

Functions:

- Timely payment of salary to employees, vendors and contractors.
- Tracking expenses of IPD patients on daily basis.
- Timely discharge of patients related to financial clearance.
- To provide accurate, relevant and timely financial information in making right sense plan and decision.

Organogram:



20. Maintenance department:

Functions:

- To maintain the overall electric supply of the hospital.
- To maintain the chilling plant room of the hospital.
- To maintain the supply of medical gases in the hospital.
- To maintain the proper functioning of sewerage treatment plant.

Location: Lower ground floor

Organogram: senior engineer (1), Electrical supervisor (1), electrician (7), plumber(4), gas operator (3), AC operator (3), AC assistants (3), STP operators (3).

Operational timings: 24 hours

Infrastructure:

- Low tension room.
- Generator panel- 2 generators of 750 ampere each.
- Diesel tank- 24 kilolitres capacity
- Sewerage treatment plan- infrastructure:
    - Bar screen chamber
    - Oil and grease lap
    - Equalization tank
    - Fluidized aerobic bioreactor
    - Tube settler tank
    - Sludge holding tank
    - Filter press
    - Chlorine contacting tank
    - Dual media filter
    - Activated carbon filter
    - Treated water tank
- Desk panel- controls air handling units
- Chilling plant room
- Gas manifold room- 24 oxyzen cylinders, nitrous oxide cylinders for OT (2).

21. Human resource department:

Total no of permanent employees- 674 (286 females, 347 males)

Total no of off roll employees-180

Manpower: head of the department, executives-6

Functions:

- Recruitment- based on requisition form respective department, from duly signed by the incharge of department, H.R. head and facility director.
- Induction and training- 3 day induction training.
- Performance appraisal- done once a year in March.
- Employee engagement activities such as birthday celebrations, open house, on the job trainings such as customer care, fire safety etc.
- Grievance handling.
- Employee exit interview- monthly evaluated.

SECTION - B

Project

Title: A Study on Radiology Turnaround Time (CT Scan and MRI)

1) Introduction:

Any test can be divided into three phase- pre analytic, analytic and post analytic. Delays can occur at any of these phases. There are different perceptions of what constitutes a TAT for diagnostic test. The general perception of a TAT is from the time of specimen is received or the procedure is started until the time the test is resulted, not taking into consideration the time needed for ordering, collecting and result reviewing. Physician have a different perception. They perceive TAT as starting at the time that the order is return and ending when they review the result depending upon which party is measuring a TAT, the definition may change. But in order to truly serve users, the organization should focus towards measuring the entire TAT, not just the time that the specimen is in the laboratory or the procedure is completed. Therefore here we define TAT in our project as "from the time the requisition is ordered at the respective department to the time the report is ready to dispatch".

2) Review of literature:-

Advancement in technologies, such as computers and pneumatic tubing system, have allowed for vast improvements in the TAT. Therefore, the perception of what the TAT ought to be is continuing to change with each new innovation.

Although the technology to improve a TAT might be good, it might also be too expensive for the institution when weighed against alternatives. With the need to improve TAT's new concept and technologies have been created. New ideas are aimed at getting the fasted possible TAT.

With rapidly changing technology, "fast enough" is continuing to get "faster". The focus of this project undertaken is to examine the methods previously used for decreasing TAT.

The examination of past efforts can establish a current position for decreasing the TAT and provide direction for further improvements.

The turnaround time (TAT) as long been established as a key factor in user satisfaction:

1. A faster TAT generally induces more satisfaction of any service and a slower TAT is associated with dissatisfaction which in turn dictates the fact that the faster the TAT the better it is.
2. That is why organizations continuously strive to improve the status of their TAT's. a rapid TAT on some tests is essential for proper patient care.

   Fleisher and Schwartz states, "The more timely and rapidly testing is performed the more efficient and effective will be the treatment ".
3. An increased TAT can cause dissatisfaction resulting prolonged stay for patient in a hospital.
4. An insufficient TAT can directly affect patient care on many different levels.

3) Objectives:

- To calculate report dispatch turnaround time in the department.
- To give workable recommendations for the improvement of the same.

4) Methodology:

- **Study Design**: Descriptive study
- **Sampling Method**: Purposive sampling.
- **Area of Study** : Radiology department of hospital
- **Sample Size**: MRI- 121 patients
  CT Scan - 67 patients
- **Study Duration** : one and half months from 14th April to 31st May.
- **Selection of respondents**: IPD and OPD both.

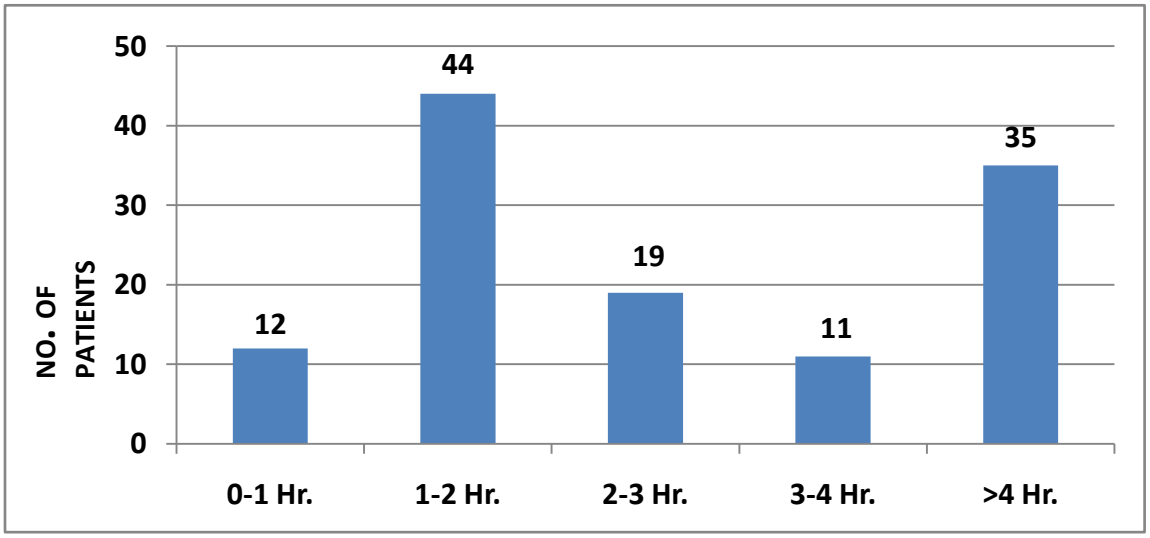
5) Data collection:

The data was collected in the following categories-

- Patient MRN no.
- Patient name
- Arrival time
- Taken for MRI/ CT-SCAN
- Patient came out of console
- Reports ready at
- Category

6) Analysis and result

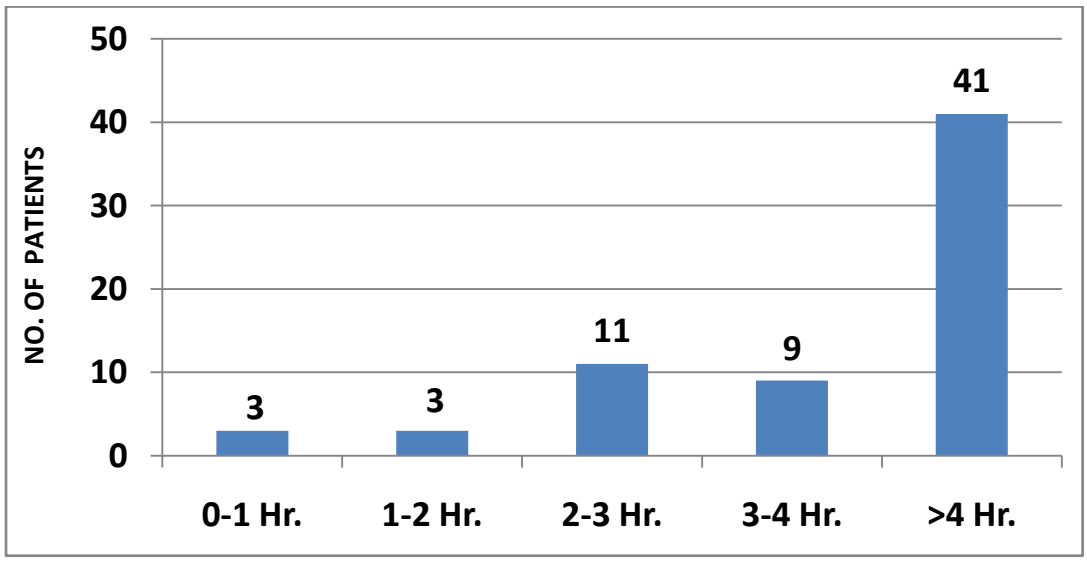
Graph: 1- Representation of TAT for MRI**:**



Interpretation:

- It represents the no. of reports were ready under standard turnaround time i.e. 3-4 hours.
- According to this graph 86 out of 121 reports were ready in time and 35 out of 121 reports were ready beyond time.

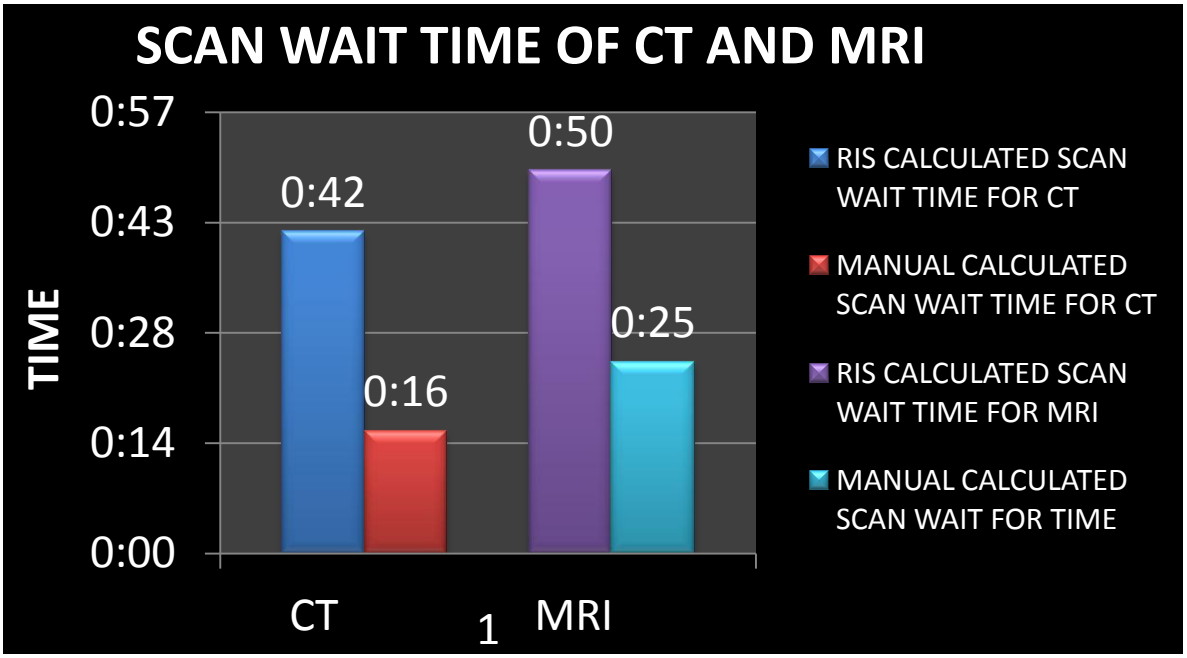
Graph: 2- Representation of TAT for CT-Scan:-



Interpretation:

- It represents the no. of reports were ready under standard turnaround time i.e. 3-4 hours.
- According to this graph 26 out of 67 reports were ready in time and 41 out of 67 reports were ready beyond time.

Graph: 3 -Representation of scan wait time:



Interpretation:

- This graph shows the comparison of manually calculated or RIS calculated scan wait time.
- According to graph RIS calculated scan wait time for MRI is 50 minutes and manually calculated scan wait time is 25 minutes.
- According to graph RIS calculated scan wait time for CT is 42 minutes and manually calculated scan wait time is 16 minutes.

Table no. 1 – TAT of Report dispatch and scan wait time.

	MRI	**CT-SCAN**
TAT of scan wait time	**0:25 minutes**	**0:16 minutes**
TAT of Reports dispatch (Normal)	**2:15 hrs**	**3:18 hrs**
TAT of Reports dispatch (Emergency)	**6:14 hrs**	**11:03 hrs**
No. of times reports were ready next day	**22/121 (18.18%)**	**25/67 (37.31%)**

Interpretation:

- In the results TAT waiting for MRI is more than TAT waiting of CT-SCAN because MRI is a process which takes time in compare to CT-SCAN.
- TAT reports for MRI are less than CT-SCAN because there is only one radiologist for the study of CT-SCAN and X-ray both.
- TAT reports for emergency are high because the findings of the study are verbally told to the respective physician.

7) Issues identified:-

- There is only one radiologist for reporting of x-rays and CT both.
- All reporting of a IP patient is done when he/she is going to discharge, it increase sudden work load on radiologist which leads to delay reporting of other OP patients of that day.
- Some time scheduling of patient is not done on time.
- Some time there is less availability of housekeeping for shifting a patient.
- Sometimes there is a need of old reports of IPD patients for reporting of CT and MRI film, which is not send by concerned ward.

- Some time doctor not able to read CT/MRI film and they call in console for findings of film. (OP Patients)

8) Recommendations:-

S. No.	Recommendations	Remarks
1.	Films should not be given to IPD patients without reporting as it causes delay in reporting and discharge process too.	
2.	Proper signage should be indicating that only one attendant is allowed with the patient to avoid overcrowding.	
3.	There should be an extra radiologist for reporting on busy days like Monday, Tuesday and Friday.	
4.	Proper decision should be taken regarding giving anaesthesia to a patient who is going for CT and MRI because sometime it causes repetition of procedure which lead wastage of time.	

Note: In the recommendations different color codings are used which have different meanings like Green = recommendation is accepted.

Yellow = recommendation is under process

Red = recommendation is not accepted

9) References:

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