

Summer Training at



**Dr. Malathi
Manipal Hospital
Bangalore**

(April 9-June 9, 2012)

**Assessment and Evaluation of Turnaround Time of
Discharge Process**

By

Preetham.H.S.

**Under the guidance of
Dr. Vivek Lal**

**Post Graduate Diploma in Hospital and Health Management
2011-2013**



**Institute of Health Management Research,
Jaipur
2012**

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Certificate

This is to certify that **Dr. Preetham. H.S.**, from Institute of Health Management Research-Jaipur, has undergone Summer Training at Dr. Malathi Manipal Hospital (Unit of Manipal Health Enterprises Pvt. Ltd) Bangalore from 9th April 2012 to 9th June 2012.

The candidate himself carried out the project. His approach to the study has been sincere, scientific and analytical.

This summer training is partial fulfillment of the course requirement is recommended for the award of Post Graduate Diploma in Hospital and Health Management.

We wish him success in all his future endeavors.

Dr. P. R. Sodani
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Dr. Vivek Lal
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Date: 09-06-2012

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Preetham H S has successfully completed his summer internship programme on "Assessment & Evaluation of Turn around Time (TAT) for Discharge Process" in Dr. Malathi Manipal Hospital, Bangalore, from 9th April 2012 to 9th June 2012.

During the period, his conduct was found good.

We wish him all the best in his future endeavors.

For Dr. Malathi Manipal Hospital
(A unit of Manipal Health Enterprises Pvt. Ltd.)



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Dr.Preetham.H.S.
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Table of Contents

Acknowledgement	4
Acronyms / Abbreviations	6
List of Tables	7
List of Figures	8
Introduction: Manipal Health Enterprises Pvt. Ltd	9-11
Organogram	12
Range of services offered at Dr. Malathi Manipal Hospital	13-14
Hospital layout	15-16
Hospital Committee	17-18
Out- patient department	19-21
Enquiry and Registration	22-23
Central Billing Department	24-27
Medical Records Department	28-32
Radiology and X-ray	33-34
Hospital Pharmacy	35
Dietary Services	36
Project report: Assessment and evaluation of Turnaround Time of Discharge process	37-76
List of Tables	39-40
List of graphs	41
Introduction	42-43
Literature review	43
Contextual background	43-46
Problem statement and objectives of study	47
The study	47-52
Results and Discussion	52-72
References	73-74
Annexure	75-76

Acronyms / Abbreviations

BARC	Baba Atomic Research Center
CT	Computerized Tomography
EMR	Electronic medical records
ENT	Ear-nose-throat (oto-rhino-laryngology)
HIMS	Hospital information management system
HK	House keeping
IP	Inpatient
IPD	In Patient Department
ISO	International Organization for Standardizations
MLC	Medico Legal Case
MRD	Medical Records Department
MRD	Medical records department
ObG	Obstetrics and gynecology
OPD	Out Patient Department
OPD	Outpatient department
OT	Operation Theatre
OT	Operation theatre
SPSS	statistical package for social sciences
TAT	Turnaround time
TPA	Third Party Administrator
USG	Ultrasonography
USP	Unique Selling Point

List of Tables

Table number	Details
1	Range of services
2	Various committee
3	Committee members
4	order of assembling records

List of Figures

Figure number	Details
1	Organogram of Dr. Malathi Manipal Hospital-Bangalore
2	Ground floor layout
3	First floor layout
4	Second floor layout
5	Third floor layout
6	Flowchart of discharge process
7	Organization structure of MRD
8	functional flow chart of MRD
9	Organizational structure of radiology department

Report on Summer Internship Program at Dr. Malathi Manipal Hospital

1. Manipal Health Enterprises Pvt. Ltd

Manipal Health Enterprises Pvt. Ltd is one of the prominent enterprises that emerged from the dream of great visionary, Dr.TMA Pai. Together with Manipal University the group offers Tertiary, Secondary and Primary healthcare delivery services from 17 hospitals, 9 Primary Care Clinics and 55 Community Health Programmes. With over 7000 beds, 5000 doctors, 15 Lakhs Out -Patients and 4 Lakhs in patients annually, and a rich history of over 50 years, It is today one of the largest health care delivery systems in Asia.

The Manipal Health enterprises brand not only signifies possession of clinical excellence but also the ability to deliver the same as **‘Care with a personal touch’** where each of our patients are cared for in the same way as one would treat a blood relative. This has been possible only by a focus on continuous improvement in all spheres of our operations and our Quality Policy speaks volumes about this orientation, this has helped us achieve several ‘1st time accomplishments’ at our different units.

1.1. Dr. Malathi Manipal Hospital

Dr. Malathi Manipal Hospital, a unit of Manipal Health Enterprises Pvt. Ltd, is a multi specialty healthcare center located in South Bangalore.

ISO 9001-2008 certified, 85 bedded centrally air conditioned hospital is state of the art & one of the finest multi-specialty care hospitals in the city.

The hospital started its operation on 25th October 2008, offers finest ambience and about 40 varieties of services for in patients, out patients,

daycare treatment and has a sophisticated surgical theater and intensive care units.

Hospital distinguishes itself with its experienced team, cutting edge technology and state of the art technology.

1.2. Organization vision-mission-core values

To be the **most preferred** Healthcare Provider

Who: preferred by patients, doctors, corporate, insurance provider & employees

Where: In every location where we have a presence

Why: Quality is our **DNA**

- Embodied in our core values of clinical excellence, patient centricity and ethical practices
- Give value for the money paid

When: Achieved this by 2014-15

1.3. Quality Policy

We will provide patient centric and ethical healthcare with empathy by harnessing technology and research in clinical care

We will strive to meet the expectations of our beneficiaries and deliver excellence in all our services through a team of trained and dedicated personnel in line with our motto '**Life's On**'.

We will ensure that our actions reflect that we are truly '**INSPIRED BY LIFE**'.

- 1.3.1. **Twelve commandments** adopted by Quality council of Manipal Health Enterprises

- Fast registration process and guidelines to new patient of the hospital
- Effective appointment process and adherence to the OPD timings by the consultants
- Reducing waiting time at pharmacy
- Patient education
- Patient grievance handling process
- Shorted turnaround time for radiological investigations
- Efficient admission process
- Proper estimation of bill along with revision
- Planned discharge process
- Triage process at emergency
- Cleanliness of the premises
- Standardization of the signage at all the units (Branding)

1.3.2. Three Core Values:

- Clinical excellence
- Patient centricity
- Ethical practice

1.4. USP of Manipal Hospital

Manipal Hospital's USP has always been '**Care with a personal touch**' and unyielding '**ethical practices.**' "**A detailed list of patient's rights is provided to the people who visit our Hospital. We also ensure that every staff of the Hospital respects the rights. Our conscience is our auditor when it comes to ethical practice.**" "We also ensure that the patient is kept informed of the cost of treatment in advance and also standardizing documents to minimize confusion and maximize satisfaction."

1.5. Organogram:

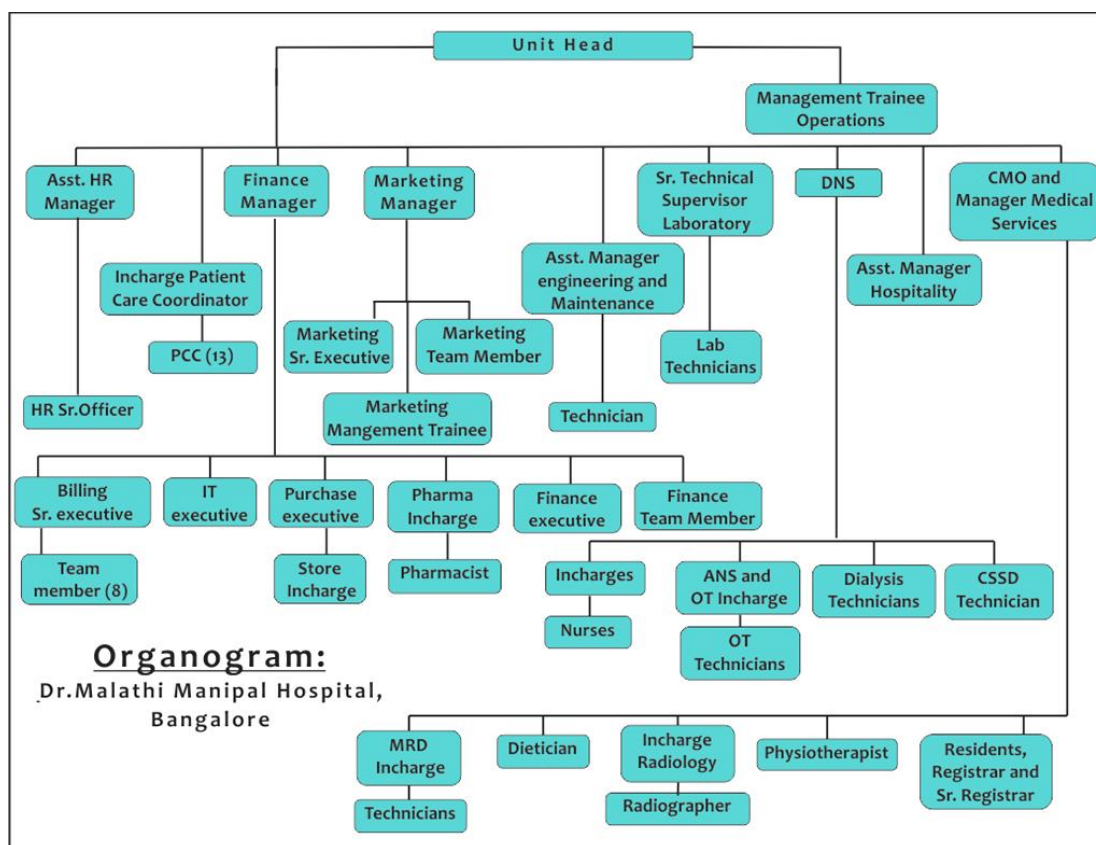


Figure (1): Organogram of Dr. Malathi Manipal Hospital-Bangalore

1.6. Range of services offered at Dr. Malathi Manipal Hospital

Table (1): Range of services

• Accident and emergency	• Oncology
• Anesthesiology	• Obstetrics and Gynecology
• Biochemistry	• Ophthalmology
• Cardiology	• Orthopedics
• Critical care medicine	• Pediatrics
• Maxillo-facial surgery	• Pediatric surgery
• Dental medicine	• Pediatric emergency
• Dermatology	• Pediatric neurology
• Diabetes and endocrinology	• Physical medicine and rehabilitation
• ENT	• Radiology
• Gastroenterology	• Respiratory medicine
• Geriatrics	• Rheumatology
• General medicine	• Plastic surgery
• General ad minimal invasive surgery	• Psychiatry
• Laboratory	• Surgical gastroenterology
• Manipal health check	• Surgical oncology
• Micro biology and molecular pathology	• Urology
• Nephrology	• Vascular surgery
• Neurosurgery	
• Neurology	

1.7. Room categories and facilities available:

Table (2): Room categories

General ward	• 7 patient in a room • Common toilet • Attendants permitted from 7:00 AM to 7:00 PM
Semi-special ward	• Two patient in a room • Common toilet • Common television

	• Common telephone • One attendant permitted through-out • One attendant cot provided
Standard room	• Single room • Attached toilet • Attendant cot provided • Telephone facility • Television facility
Special/Private room	• Single spacious room • Attached toilet • Attendant cot provided • Telephone facility • Television facility
Deluxe room	• Spacious room with ambience • Attached toilet • Attendant cot provided • Telephone facility • Television facility • Refrigerator provided

Food is included in the room rent.

A toiletry kit containing a comb, hair oil, tooth brush, tooth paste and soap is given to all admitted in patients.

1.8. Hospital layout

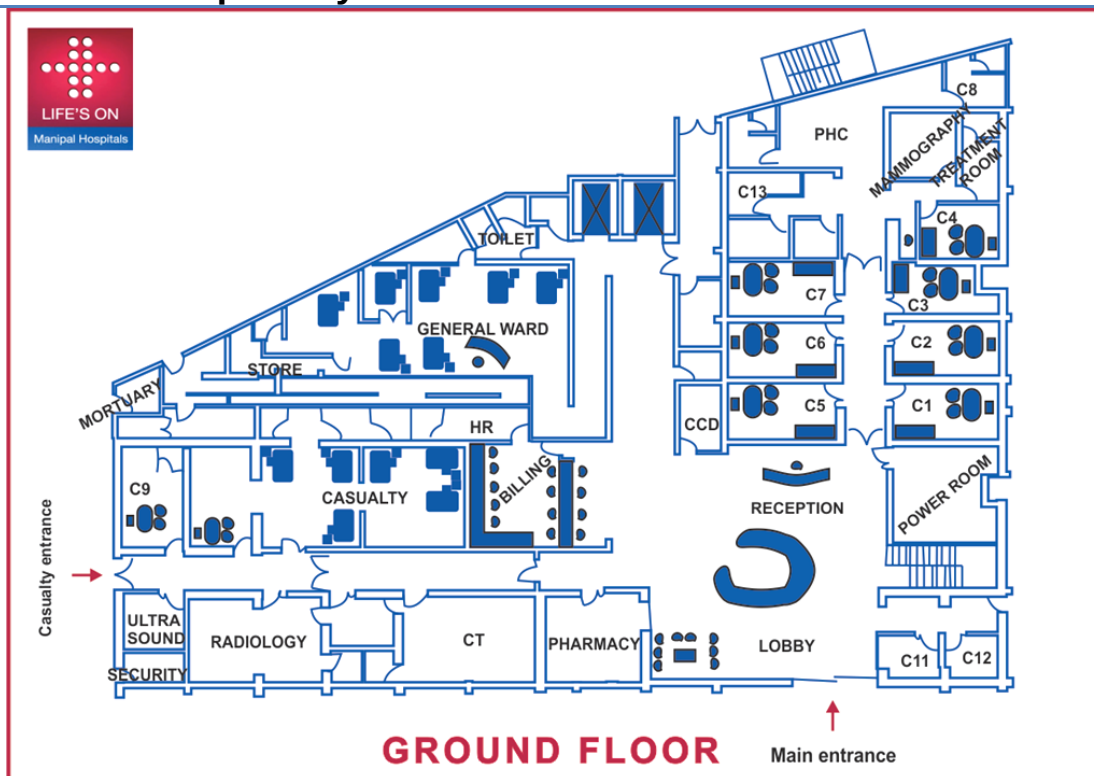


Figure (2): Ground floor layout

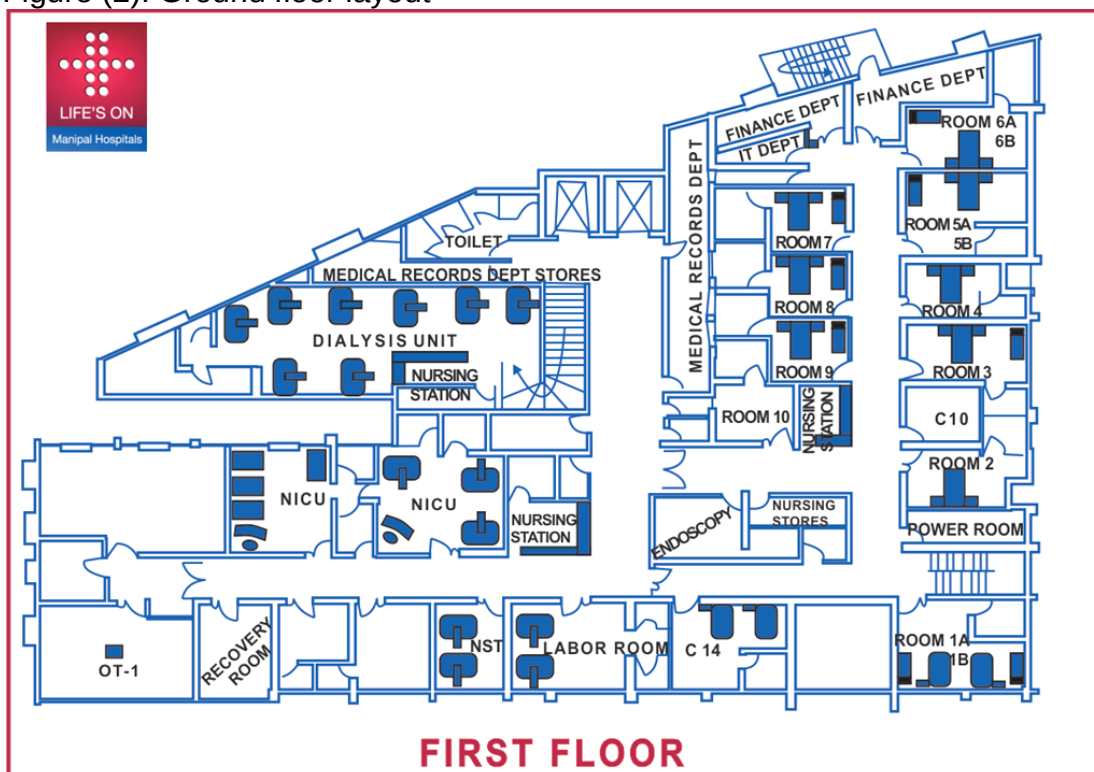


Figure (3): First floor layout

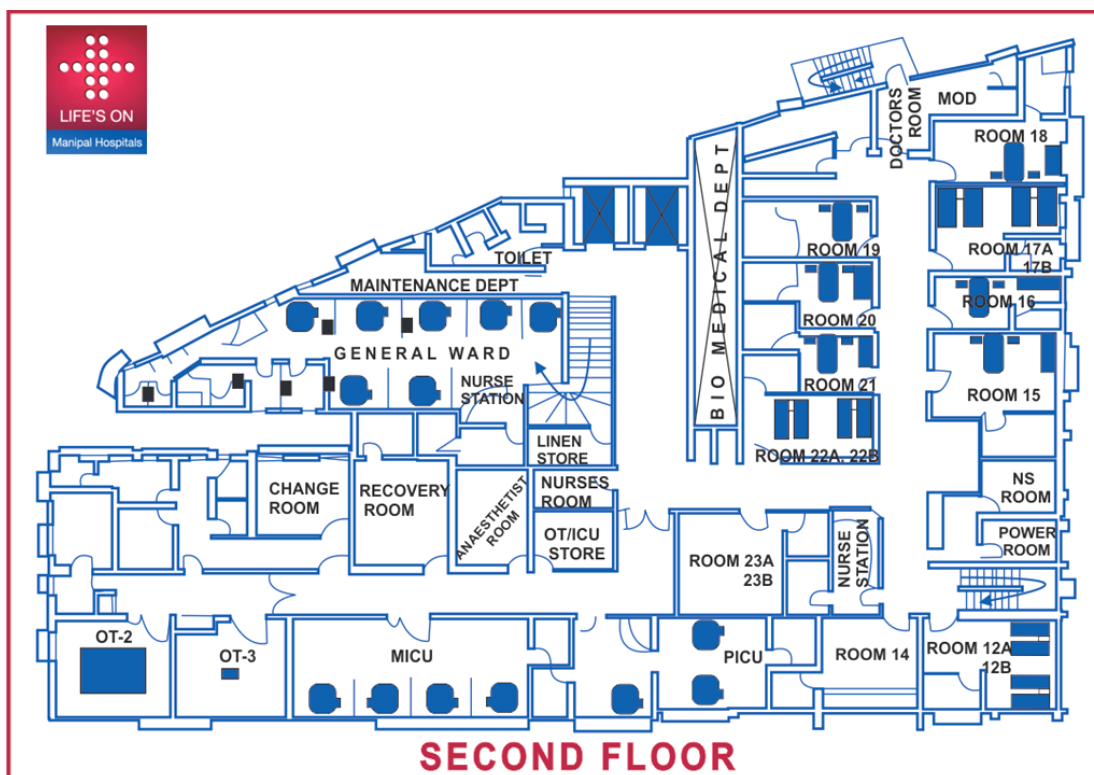


Figure (4): Second floor layout

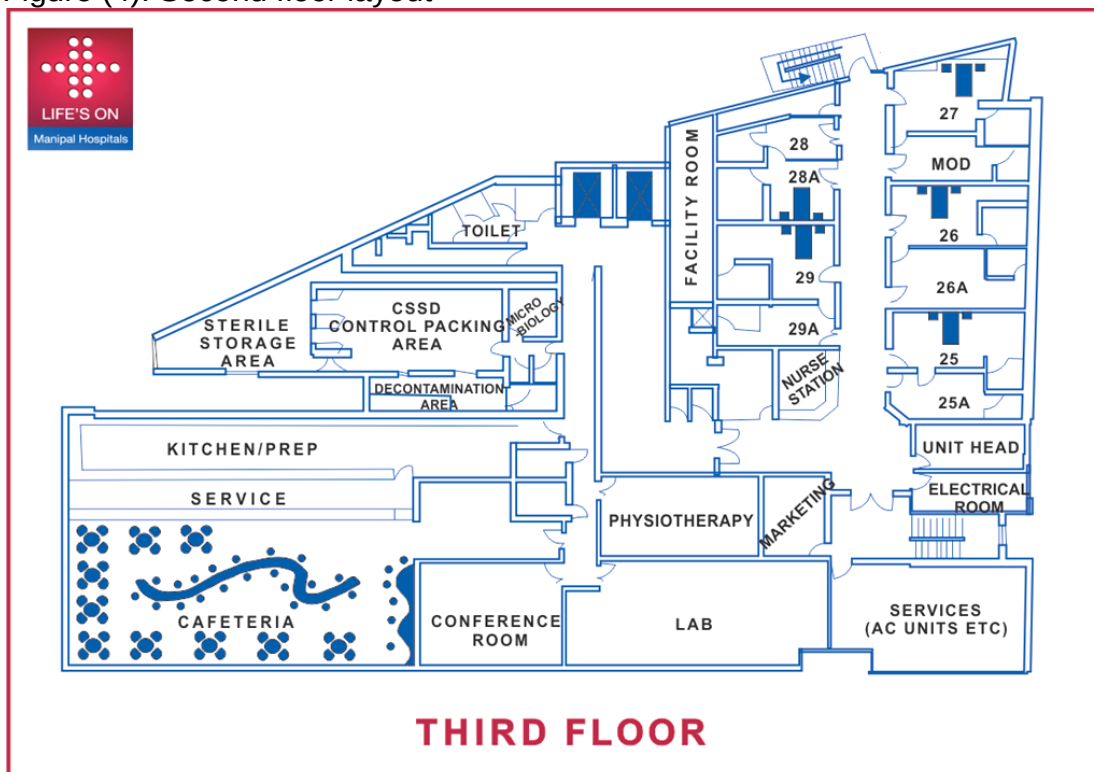


Figure (5): Third floor layout

2. Hospital Committee

2.1. Committee details

Table (2): Various committee

Name of the committee	Purpose, scope and need	Size	Frequency of meeting
Quality improvement committee	Continuous quality monitoring and improvements in the hospital	11 members	Monthly
Safety committee	Overall safety monitoring and improvement of safety in various departments	13 members	Monthly
OT coordination committee	Requirement and issues of OT in Hospital	10 members	Monthly
Purchase committee	Purchases decisions and issues	6 members	Once in three months
Condemnation committee	Condemnation issues of materials	7 members	Once in three months
Pharmacy therapeutic committee	Hospital formulary decision, design and issues	5 members	Monthly
Infection control committee	Overall infection control and issue handling	10 members	Monthly

2.2. Committee members:

Table (3): Committee members

Name of the committee	Committee members
Quality improvement committee	• Unit head • Five internal quality auditors • Head of the department from all departments
Safety committee	• Unit head • Head of the department from all departments • Radiation safety in charge

	• Medical safety in charge • Security in charge
OT coordination committee	• OT manager • Surgeons • Nursing superintendent • OT nurse in charge
Purchase committee	• Unit head • Head finance department • Head-purchase department • Head-stores • biomedical engineer
Condemnation committee	• Unit head • Head-finance department • biomedical engineer • Housekeeping in charge • Head of the department OT • Nursing superintendent • Manager Medical services • Representative doctors from all specialties
Pharmacy therapeutic committee	• Unit head • Pharmacy in charge • Surgical specialists • Medical specialists
Infection control committee	• Unit head • Infection control nurse • Microbiologist • Critical care consultants • Nursing care representative • OT representative • Facility representative

2.3. Subject matter:

Member of the committee will bring about the subject matter of the meeting.

2.4. The committee Chairman:

- Unit head
- There will be a chair person and a conveyor for all committee meetings

2.5. Minutes and Conclusion:

The minutes documented with deadline and responsible person for closure of the issue at each conclusion.

3. Out- patient department

3.1. Outpatient Department

Location	Ground floor and first floor
Number	14

3.2. Main public entrance

- At ground level
- Sheltered from weather
- Type of door: automatic sliding glass doors
- Security check to ensure safety
- Designed to handle wheel chair and stretcher

3.3. Public area:

- **Reception and information desk:**
Located conveniently at the lobby

3.4. Public waiting area

3.4.1. Main waiting area:

- The area has inviting atmosphere with comfortable seating arrangements, television facility, Magazines and news papers.
- Fire extinguishers are present

3.4.2. **Sub waiting area:** In front of each OPD, Seating arrangements available.

3.4.3. Public toilet facility:

- At ground floor
- Male and female toilets not separated.
- Easily accessible from waiting area

3.4.4. Water cooler and drinking water facility:

- Provided with disposable glasses
- Hot water and cold water available

3.4.5. Elevators and stairs:

- Conveniently accessible from the lobby
- Discharge patients into corridor, not directly into lobby.
- Adequate lifting capacity with space to accommodate trolley and wheel chair

3.4.6. Signage system:

- Available with English signage boards
- Regional language signage boards are absent.

- Directory and floor plan boards are absent
- Information board and patients' rights boards are displayed
- Consultant specialist names categorized under each department are displayed in English language

3.4.7. Outpatient billing and cashier booth present near the main waiting area

- Number: 3

3.4.8. Coffee shop and snack bar:

- Café Coffee Day outlet installed at the lobby area, accessible from waiting area.

3.5. Facilities available at OPD:

3.5.1. Public areas and administration

- Trolley bay
- Reception and Help desk
- Registration counter
- Lobby and waiting lounge
- Toilet and drinking water facilities
- Public telephone
- Coffee shop,
- Security out post and fire alarms
- Billing and insurance Desk
- Counseling for IP admission
- Play Area for Kids
- Prayer and temple area

3.5.2. Clinical facilities

- General examination rooms
- Special examination rooms i.e. for ENT, EYE, etc.
- Treatment/procedure rooms
- Nursing station
- Injection room
- Laboratory and sample collection area
- Pharmacy outlet
- Radiology services

3.6. Flow pattern of work:

- Reception and enquiry i.e. first point of contact in the hospital
- Registration
- Moves to sub-waiting area

- Visits the doctor at OPD
- Subjected to number of clinical investigations
- Patient sent home based on clinical findings
- Patient is admitted (if required) for further evaluation and treatment.

3.7. Source of origin of OP cases:

- Direct walk in patients to the hospital
- Referred case from outside hospitals, local doctors etc.
- Attendance in casualty on an emergency basis
- Follow-up cases or repeat visits

4. Enquiry and Registration

4.1. Enquiry and Registration

Scope	First place of contact point for patients with the hospital service, patients are received, data recorded and sent to various departments
Location	The registration counters are located in the main lobby area, easily accessible by outpatient departments of the hospital. It is located close to the entrance which can be easily viewed. The counters are manned by courteous and well mannered staff.

4.2. Counters

1 number	Enquiry/May I help you	Single window system
2 number	Registration	single window system

4.3. Function:

The department provides information and guidance on the various facilities available in the hospital. The patient is registered as outpatient in the hospital and sent to the various departments depending on his complaints.

4.3.1. May I help you counter:

- The staffs working in this counter are patient friendly. He/she guides the patients who are coming for the first time to the hospital. The patient is assisted in filling the outpatient registration slip containing the name, age, sex, marital status, fathers / husband name, address, occupation, religion and the referral department.

4.3.2. Enquiry counter:

- This counter caters to general enquiries; enquiry regarding location of various department, details regarding various facilities etc.
- This counter is equipped with a computer, so that locating patients admitted in various wards can also be done here.
- At this counter, the patient can collect the registration form which is filled before proceeding to the registration counters.

4.4. Registration system:

4.4.1. Old registration:

- Patients on their subsequent visit are sent to this counter where their outpatient number, hospital number and the referral department are entered. The details are sent to the medical records department situated in the basement on a tracer card through a chute. The patient is sent to the department and the file is sent from medical records department to that particular department.

4.4.2. New registration:

- Patients visiting the hospital for the first time are directed from the enquiry counter along with the registration form duly filled to the new registration counter. Here the sociological details of the patient are entered into the computer. A computer printed outpatient ticket with number is given to the patient. A fee is collected and the OP record is sent directly to the concerned department. This facility is available only for the first visit.

4.5. Activities of the registration counter:

- Discipline wise, unit wise and sex wise classification of old and new registration.
- Geographical distribution of new registration
- Feeding into computer, admissions during night; transfer of patient from one department to another; admission statistics;
- Cash remittance to accounts department
- Taking central appointments
- Issue of duplicate card
- Correction and modifications, if any wrong social data is given by the patient (OP and IP)

5. Central Billing Department

5.1. Central Billing Department	
Scope	Primarily- billing for OPD, IPD, daycare, laboratory and radiology services and point for collection of money Secondarily: liaison office between the management and the patients with immense patience, human relations and hospitality
Location	At ground floor, easily accessible from the lobby area

5.2. Admission process:

As Doctor advises for admission, patient will be given admission slip which has information on the plan of treatment and number of the days to stay. The patient or their attendant will hand over the admission slip to billing counter. The cashier or billing executive will hand over the consent form which has to be filled by patient or their attendant. The billing executive will also provide the approximate cost of hospitalization and the counseling will be done for the room tariff and the availability of bed.

They will also provide all information and assistance with the documentation required for the cashless hospitalization.

5.3. Discharge process:

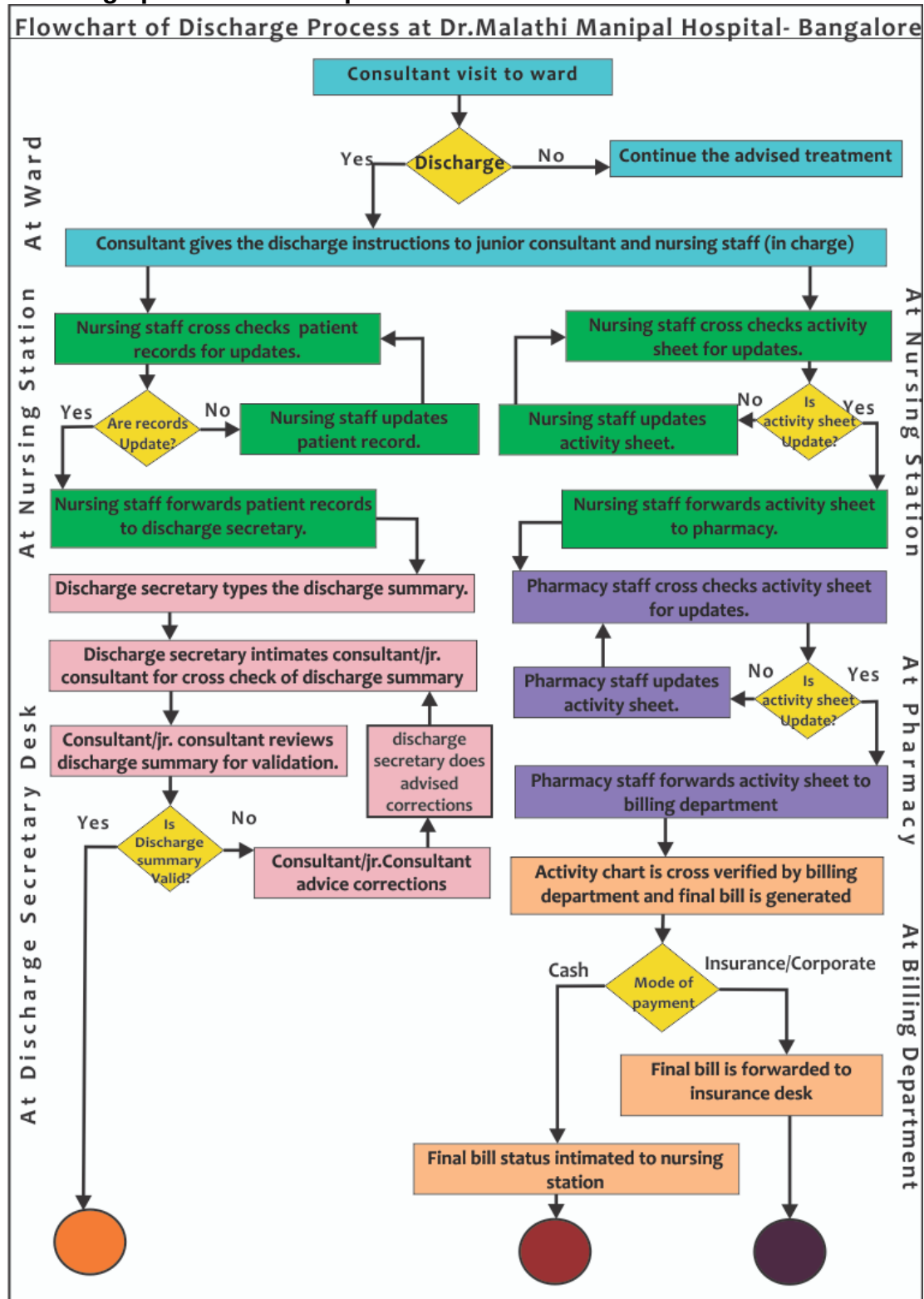
Once the doctor has advised patient for discharge, patient file will be updated by the duty doctors. The medication patient would need and the details of the treatment that they have undergone will be entered into the file. Once patient discharge summary is prepared, the billing section will crosscheck all the entries and prepare the final bill. Patient will be once the final bill is ready. Patient attendant may proceed to the billing section and collect final bill and settle the final bill at the billing counter. Once the bill is settled billing executive will hand over two clearance slips. One slip to be handed

over to the nursing station and one slip to the security counter at the entrance.

5.3.1. TPA mode of payment/insured patient billing process:

As patient requires cashless hospitalization the patient attendant has to ask for the pre authorization form from the billing desk. Proof of insurance coverage/Medicare and other insurance identification are needed to verify your eligibility for claims filed by the hospital. Patient has to pay non-medical expenses at the time of final bill clearance. Non-medical expenses refer to those expenses that are not covered for reimbursement by the respective TPA/Insurance Company.

5.3.2. Discharge procedure for inpatients



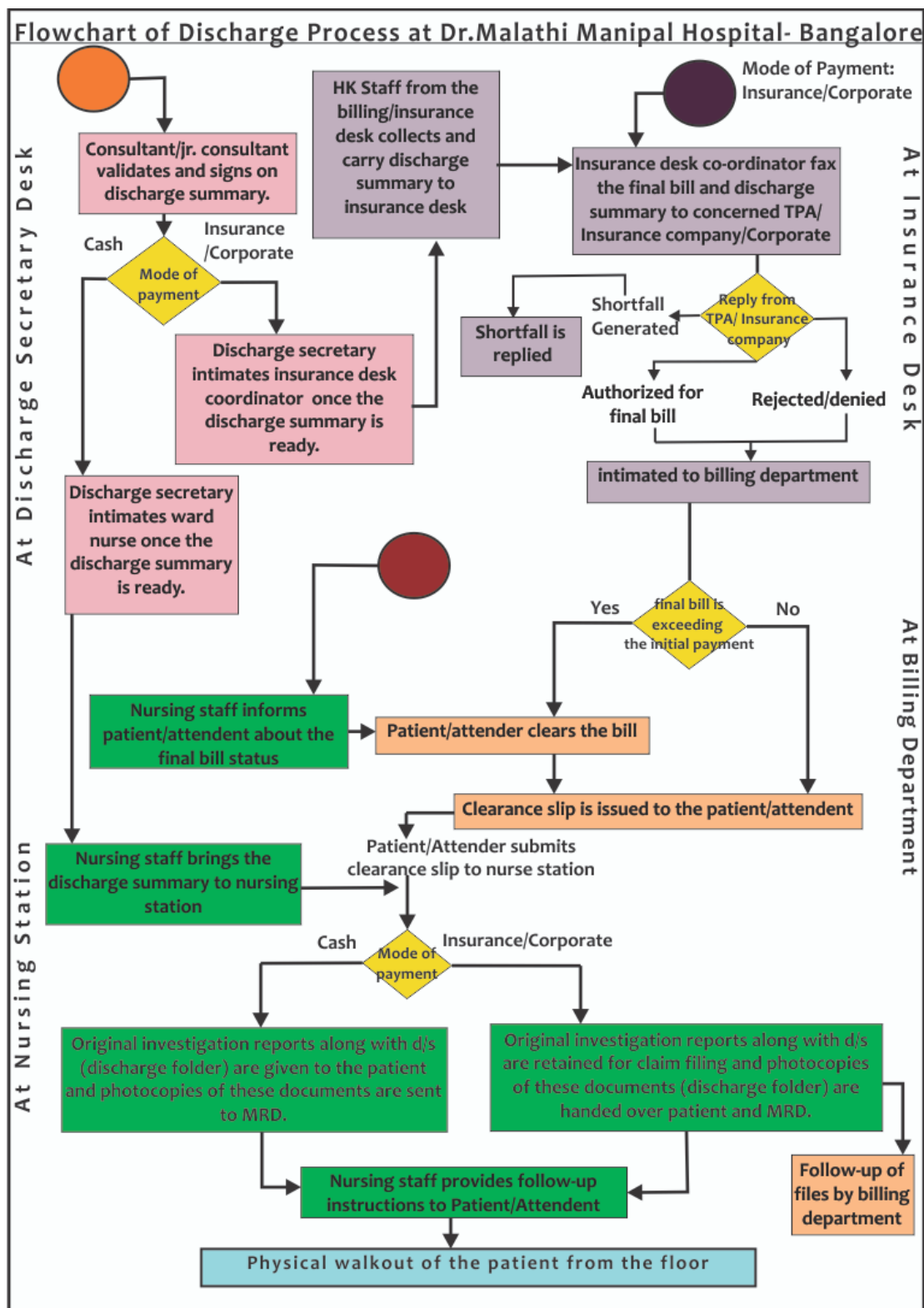


Figure (6): Flowchart of discharge process

6. Medical Records Department

6.1. Medical Records Department

Scope	Documentation and preserving of Clinical, Administrative and Legal document valid in the court of law.
Location	MRD is locating on the first floor, divided into two areas. Document collection and processing area, storage area.

6.2. Physical Facilities and equipments:

- Good ventilation through windows and fans
- Natural light and artificial lights
- Adequate chairs and tables
- Telephone line (intercom)
- Two computers and one printer
- Document scanner
- Laminating machine

6.2.1. Storage area:

The storage area is well ventilated and well lit. It usually contains steel racks, which are mobile and of plain steel

6.2.2. Fire extinguishers: The MRD working area is provided with fire extinguishers for A, B, C type of fires

6.3. Manpower planning:

6.3.1. Organizational Structure of department:

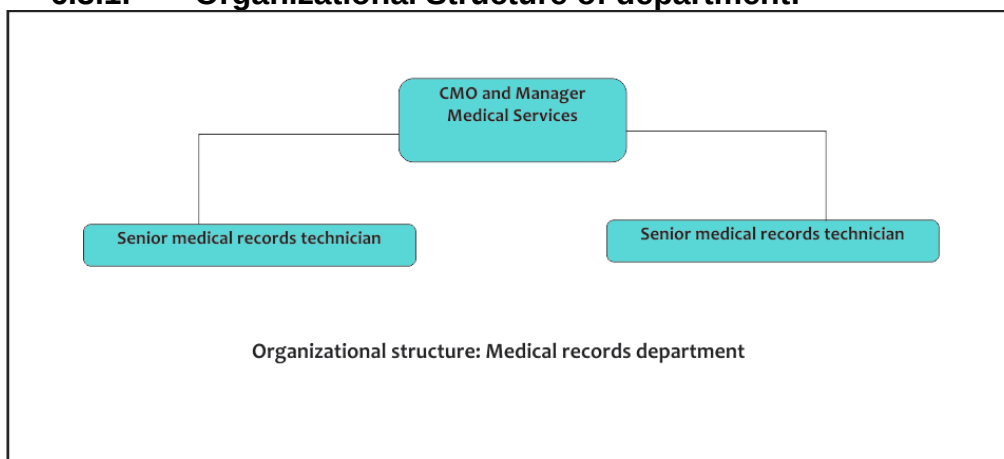


Figure (7): Organization structure of MRD

6.3.2. Manpower: 2 personnel

6.3.3. **Working hours:** 12 hours shift (from 8:00 AM to 8:00 PM); 6 days week.

6.4. Order followed in Assembling:

Table (4): order of assembling records

Order	Item
1	Checklist
2	Admission records
3	Discharge summary
4	Consent form
5	Lab and X-ray reports (any other reports)
6	Progress notes
7	Anesthesia notes
8	OT notes/ Labour record
9	Physician orders
10	Nurses records
11	Input and output charts
12	TPR charts
13	Others

6.5. Policies and Procedures

6.5.1. Records retention policy

Outpatient files	For 3 years (hard copy retained) and there after soft copy is maintained.
Inpatient files	For 5 years (hard copy retained) and there after soft copy is maintained.
Medico-legal files	Maintained permanently (both hard and soft copy is retained).

6.5.2. Medico Legal Cases (MLC) Record Maintenance

- All MLC records are maintained under lock and key.
- Each MLC case has an MLC no. which is generated by the medical records department.
- All the records with in this file is numbered (including the nurses record) and stored. In case of files retrieved for issue to court, a tracer card replaces them, which is red in colour. A photocopy of the documents along with the copy of summons is retained and original documents are submitted to the court of law.
- The decision of retaining of the documents is based on the management decision.
- A register is maintained for documenting the issue of disability- certificate, treatment-certificate and injury-certificate.

6.5.3. Court Attendance

- The MRD receives summons from the court through the Medical Superintendents Office for producing MLC files.
- One technician from MRD attends the court in order to submit the records.
- Before submission, the number of pages in outpatient and in-patient records, investigation reports, no. of X-ray films is documented and made triplicate in a typed format.
- The court will retain two copies of MLC file, the third copy is returned to the hospital signed by the court manager. This serves as acknowledgement.

6.5.4. Birth and Death Report

- The MRD maintains a birth and death report book in duplicate.
- It also generates a birth/death report, which is sent to the corporation through the Medical Superintendents office so as to enable the party to obtain birth/death certificate.
- The report is sent within 21 days to the corporation office.

6.5.5. Functional flow chart:

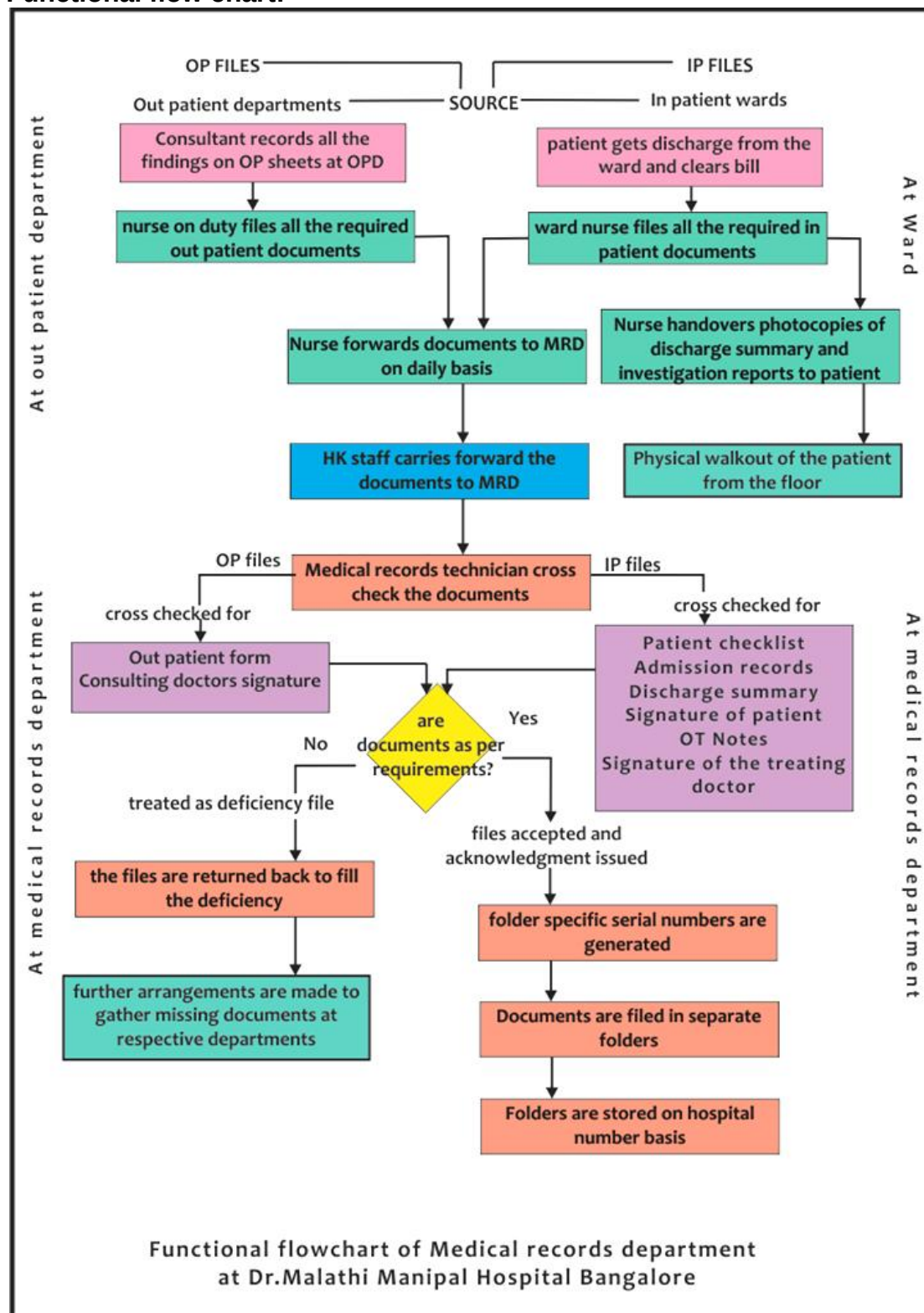


Figure (8): functional flow chart of MRD

6.5.6. Quality indicators for MRD:

- Report and data on ALOS and bed occupancy on daily and monthly basis
- Percentage of missed records
- Percentage of consent not signed/improper
- Percentage of files not having discharge summary
- Data on mortality rate
- ICD classification

7. Radiology and X-ray

7.1. Radiology and X-ray

Scope	Diagnostic and prognostic purpose of the inpatient, out patients and casualty department
Location	The department is situated at the ground floor, easily accessible by casualty patients, out patients and less easily accessible by in patients.

7.2. Equipments:

7.2.1. X-ray machines

Mounted X-ray Machine	238-300mA
Portable X-ray machine	60mA

7.2.2. CT Machine

Toshiba multi slice CT scanner (Asteion multi 4)	4 Slice
--	---------

7.2.3. Ultrasonography Machine

GE Logiq P5

7.3. Layout:

- 7.3.1. **Sub-waiting area:** is close to the procedure room. Sub-waiting area is outside the department with seating facility.
- 7.3.2. **Change – rooms:** The facility available within the procedure room.
- 7.3.3. **Procedure room:** This room caters for special procedures like ultrasound, CT. For the x-ray room, CT and USG, separate procedure rooms are available.
- 7.3.4. **Reporting area:** Situated adjacent to X-ray and CT Procedure room, fitted with film reader, computer and printer, eraser where the film is developed and report is generated.
- 7.3.5. **Control Room:** The control room is located within the x-ray room with a 1 mm lead protection shield installed.

7.4. Organization structure of the department

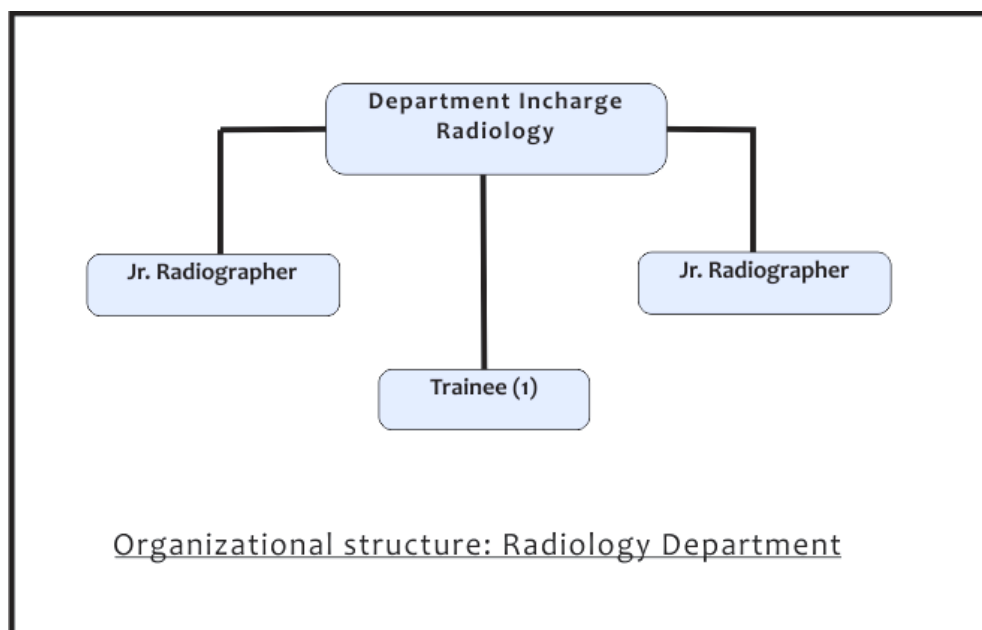


Figure (9): Organizational structure of radiology department

7.5. Manpower:

Number	4 personnel
Working hours	24/7 service
Working pattern	Shift basis
Number of shifts in a day	3 (2 Day shifts and 1 night shift)
Staffing	2 person in day shift (8 Hrs shift per person) 1 person in night shift
Rotation of shift	Once in 2 week

- Radiation measuring badge (dosimeter) is worn by the Radiographer every time during operating. The badge is issued by the BARC and sent to the same once in three months for checking the level of radiation exposure.

8. Hospital Pharmacy

8.1. Hospital Pharmacy

Scope	drug dispensing centre in the hospital
Location	Ground floor, central pharmacy

8.2. Staffing:

- 1 pharmacy in charge
- 7 pharmacists

8.3. Working hours:

- 2 pharmacists from 8:00 AM to 12:00 PM,
- 2 pharmacists from 12:00 PM to 8:00 PM
- 1 pharmacist from 8:00 PM to 8:00 AM
- 1 Pharmacist for general shift
- 1 pharmacist for bulk stores (6 days working and 1 day off in a week)

8.4. Arrangement and distribution pattern of drugs:

- Order of arrangement of drugs: Alphabetically
- Color coding for lookalike and sound alike drugs
- First Expiry First Out system followed

9. Dietary Services

9.1. Dietary Services

Scope	Supply of diet as per patient requirement is essential for sick and the recuperating patients. Ensuring the patients are provided with high quality food, tasty and served in presentable manner.				
Location	<table> <tr> <td>Consultation and counseling</td><td>2nd floor</td></tr> <tr> <td>Pantry and canteen</td><td>3rd floor</td></tr> </table>	Consultation and counseling	2 nd floor	Pantry and canteen	3 rd floor
Consultation and counseling	2 nd floor				
Pantry and canteen	3 rd floor				

9.2. Type of service: Outsource type.

9.3. Workflow:

Procurement	Grocery, cleaning and packaging materials	Once in a month
	Vegetables and fruits	Twice in a week
	Milk and milk products	Daily
Storage	Cold storage	For fruits and vegetables, milk and milk products
	Dry storage	Groceries
Preparation	Cardiac diet	Less/no oil diet
	Renal and Hypertension diet	No salt diet
	Diabetic diet	No sweet and sugar diet
	Normal diet	Regular diet
	Soft diet	
	Bland Diet	
	Liquids	
	Feeds	Tube feeds
Service	Normal diet	Morning afternoon and night on regular basis
	Liquids and feeds	Served on every second and fourth hourly basis

9.4. Staffing:

	Total number of person	Number of person per shift	Work hours per shift
Supervisors	2	1 per shift	8 hours
Cashiers	2	1 per shift	8 hours
Stewards	12	6 per shift	8 hours
Head chef	2	1 per shift	8 hours
Assistant chef	2	1 per shift	8 hours

Summer Placement in



Dr. Malathi
Manipal Hospital
Bangalore

(April 9-June 9, 2012)

Project Report

Assessment and Evaluation of Turnaround Time
of Discharge process
at Dr. Malathi Manipal Hospital- Bangalore.

Dr.Preetham.H.S.

Post-graduate Programme in
Hospital & Health Management
2011-2013



Institute of Health Management Research
Jaipur

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Dr.Preetham.H.S.
16th Batch PGDHM, Institute of Health Management Research-Jaipur

List of Tables:

- Table (1)** Wards and nursing station at Dr. Malathi Manipal Hospital- Bangalore
- Table (2)** Number of discharges selected
- Table (3)** Dependent and independent variables
- Table(4)** Total TAT for complete Discharge process
- Table(5)** Total TAT for complete Discharge process floor/nursing station wise
- Table (6)** Total TAT for complete Discharge process mode of payment and department wise
- Table (7)** Total TAT for complete Discharge process department wise
- Table (8)** Cashless/Corporate mode of payment and total TAT for complete discharge process
- Table (9)** Time taken for various processes of discharge at insurance desk
- Table (10)** Time taken at various subunits of discharge process
- Table (11)** Time taken for discharge process at discharge secretary desk
- Table (12)** Average time taken to prepare discharge summary
- Table (13)** Average time taken to prepare discharge summary on day of discharge wise
- Table (14)** Average time taken to prepare discharge summary various floor of discharge wise
- Table (15)** Time taken by hospital pharmacy in discharge process
- Table (16)** Time taken by billing department for discharge process
- Table (17)** Average time taken by billing department to generate final bill admitted department wise
- Table (18)** Average time taken by billing department to generate final bill mode of payment wise

Table (19) Time lag between various subunits in discharge process

Table (20) Time lag between Discharge Secretary and Nurse station in transferring finalized discharge summary

Table (21) Average time taken by patient to clear bill

List of graphs:

- | | |
|------------------|--|
| Graph (1) | Time of advice for discharge by consultant |
| Graph (2) | Time of physical walkout of patient from the floor |
| Graph (3) | Distribution of time taken for discharge process at Dr. Malathi Manipal Hospital – Bangalore |
| Graph (4) | TAT for complete discharge process from patients of Tulip floor |
| Graph (5) | Time taken for discharge process at pharmacy-day wise |

Assessment and evaluation of Turnaround Time of Discharge process at Dr. Malathi Manipal Hospital- Bangalore.

Introduction:

Organizations have to closely monitor the environment and continuously plan to gain a competition advantage due to exceeding intensity of the competition in today's market and business environment. Organizations need to adjust their operations and reorganize structure to retain customer and maintain profitability and survive competitiveness, especially when the competitive market associated with cost and unsatisfied customers.¹⁻³

Likewise, being one of the largest service sector, hospitals often encounter situations where the available resources fail to deliver desired output, resulting in the exceeding bed demand against the capacity. As a resultant there will be an undesirable delay, Post pone of the treatment or cancellation of admission, Patient dissatisfaction and damage to the loyalty, Loss of the hospital revenue and competitive edge.⁴

Although, efficient utilization of the existing beds in a hospital is one of the effective strategies in achieving the demand and supply gap, hospital encounter a potential challenge in achieving the efficiency and effective management of the existing beds.

Available beds are a hospital's most important resource and the length of stay in hospital is an important factor in its efficiency. The unnecessary occupation of hospital beds and rooms and consequent low hospital bed turnover rate represent a waste in health care resources, and result in heavy associated organizational costs (Porhasani 1995).

To maintain a competitive edge, a major focus of hospitals today is to increase bed capacity without the need to build and staff additional beds.⁵

One of the prime process by which a hospital can improvise the availability of the beds in the hospital is patient discharge process. A good discharge process is a vital for a hospital to ensure patient satisfaction, bed availability, quality process towards patient care, customer loyalty.⁶

A fast discharge process can ensure early availability of patient beds, which in turn, can reduce the waiting time of patient admissions or even reduce the incidence of patient rejection due to unavailability of beds (Nagaraju 2005).⁸

Turnaround time is the period for completing a process cycle or time taken to deliver output once the process is submitted to operate, often turnaround time tool is used to evaluate whether the processes are economically advantageous, making the most efficient use of time and materials.

Discharge turnaround time can be defined as the interval from the time the consultant orders for discharge of the patient to the time physical walkout of the patient from the floor.

Monitoring discharge turnaround time allows hospital to measure the efficiency of bed management and effectiveness of the operating process within the hospital.

Literature review:

Cohen et al., (1980) states the Operational definition of hospital as “A hospital can be described as a network of service units with finite capacity through which patients are flowing”⁷

“An ‘inpatient’ is a person who has been admitted to a hospital for bed occupancy for purposes of receiving inpatient hospital services. A person is considered an inpatient if formally admitted as an inpatient with the expectation of remaining at least overnight and occupying a bed, even if it later develops that discharge or transfer to another hospital is possible and a hospital bed actually is not used overnight”-as defined by Health Law Professional Series⁸

Nagaraju.D. (2005) defines the discharge process as “patient discharge process is ‘the final step of the treatment procedure during patient’s length of stay’, and timely discharge as ‘when the patient is discharged home or transferred to an appropriate level of care as soon as they are clinically stable and fit for discharge’”⁹

Levesque and McDougall (1996) defines customer Satisfaction as an “overall customer attitude towards a service provider”¹⁰ and “When customers are satisfied, they are more likely to return, while dissatisfied customers are more likely to go elsewhere” Heskett et al., 1994; Strauss et al., 2001; Zairi, 2000¹¹ Satisfied customers are more inclined to be loyal, producing several benefits for organizations (Asif and Sargeant, 2000; Hansemark and Albinsson, 2004; Reichheld and Sasser, 1990)

According to (Gholipor & Ghomry 2003) “The discharge process represents the final contact between the patient and the hospital health professionals, and the outcomes of all procedures undergone by the patient are recorded at this stage. Improving the quality of the discharge process should therefore lead to an increase in patient satisfaction. As a result patients are likely to return to a health centre where they have experienced an efficient discharge process when they next seek treatment. In turn, efficiency and productivity are increased at the hospital”.¹²

Sima Ajami and Saeedeh Ketabi (2004) analyzed the average waiting time during the patient discharge process at Kashani Hospital in Esfahan, Iran as-the average

waiting time in the discharge process in Kashani Hospital was 4.93 hours. The personnel at the hospital had the opinion that the factors affecting waiting time in the discharge process, based on their importance from most to least, is as follows: physicians do not visit patients on time, delay by interns in completing the documentation summary sheet (Discharge Summary) in the medical record absence of networked Hospital Information Systems, absence of guidelines for personnel involved in the discharge process. The same study also explored the longest waiting times for discharge throughout a week was on Mondays, Tuesdays and Wednesdays (midweek days).¹³

Contextual background:

Dr. Malathi Manipal Hospital, a unit of Manipal Health Enterprises Pvt. Ltd, is a multi specialty healthcare center located in South Bangalore.

ISO 9001-2008 certified, 85 bedded centrally air conditioned hospital, is state of the art & one of the finest multi-specialty care hospitals in the city. The hospital started its operation on 25th October 2008, offers finest ambience and about 40 varieties of services for in patients, out patients, daycare treatment and has a sophisticated surgical theater and intensive care units. Dr. Malathi Manipal Hospital distinguishes itself with its experienced team, cutting edge technology and state of the art technology. Altogether there are about 200 consultants, support staff and specialists.

Since the inception, Malathi Manipal Hospital Bangalore caters to about 3900 consultations per month of which about 900 constitute new consultations. On an average every month there are about 470 inpatients avail the treatments from the hospital from various wards.

On an average about 440 patient discharges from various wards of the hospital every month and data collected from the feedback by discharging patients on discharge process reflects patient satisfaction level of 3.2 on a scale of 4.

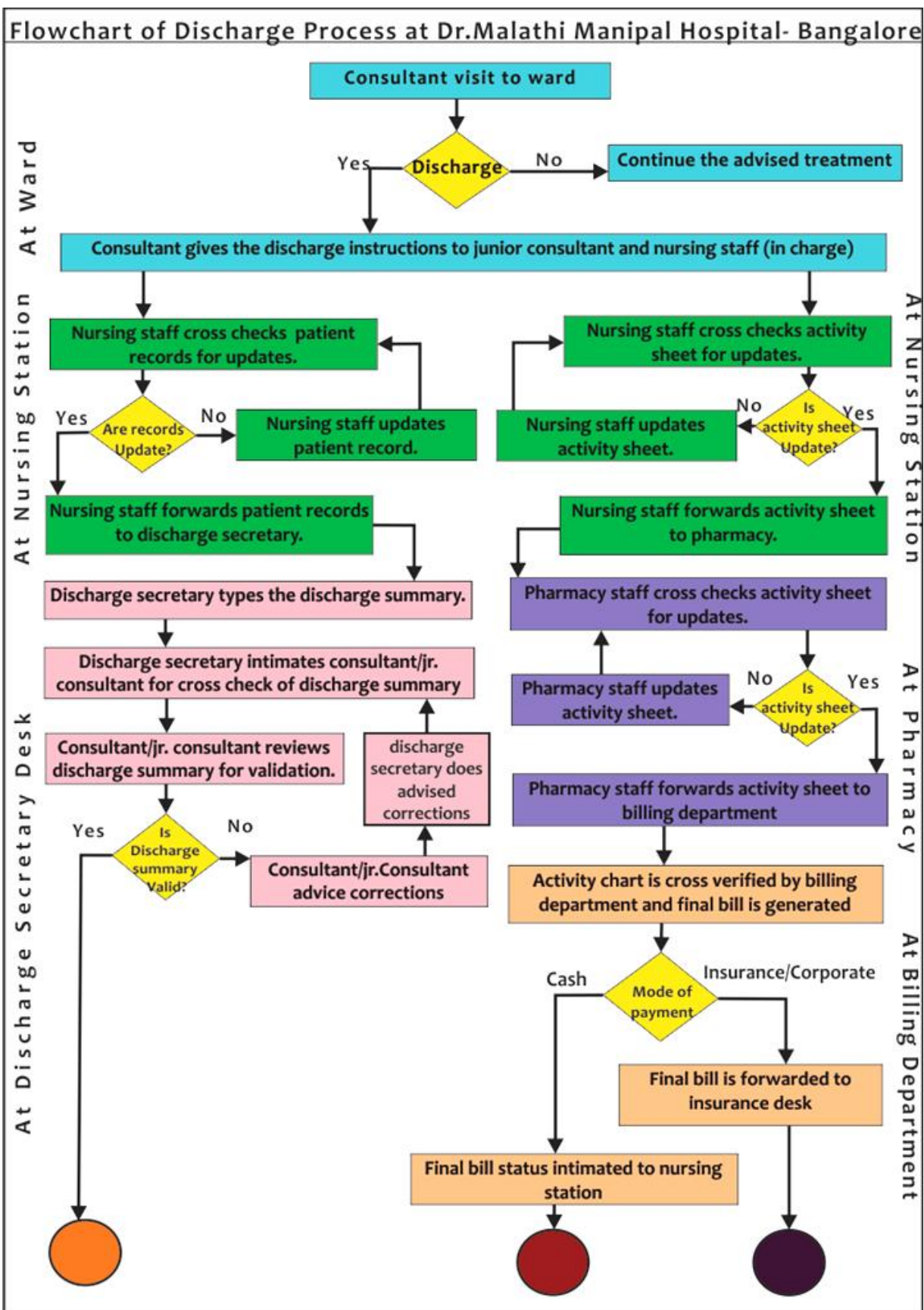
A. Discharge process at Dr. Malathi Manipal hospital:

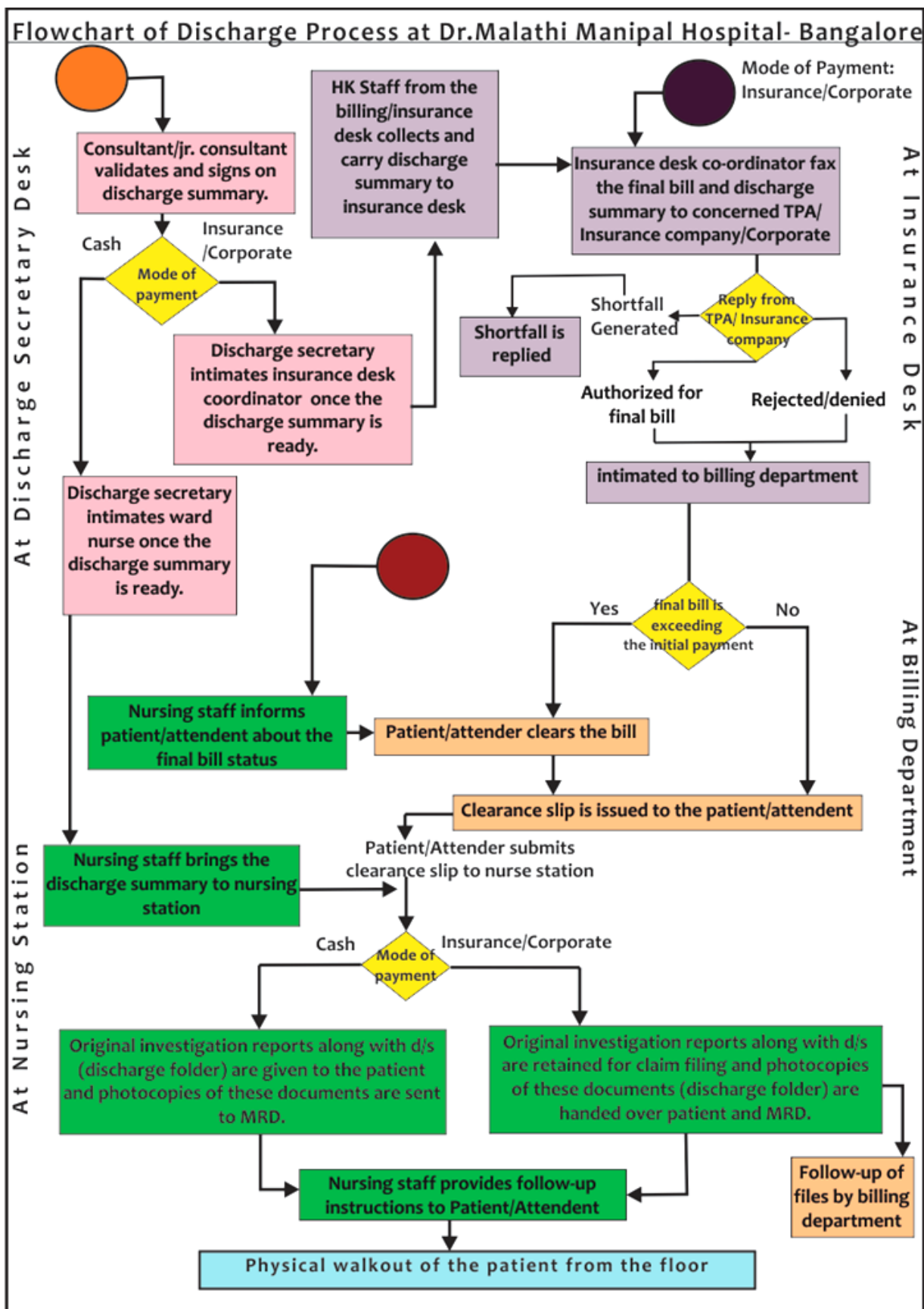
Start point: consultant advice discharge of the patient.

End point: physical walkout of the patient from the floor.

Departments directly involved in discharge process:

- Admitted ward
- Nursing stations
- Discharge secretary desk
- Hospital pharmacy
- Inpatient billing department
- Insurance desk





B. Problem statement:

When plotted on the Pareto chart, it is observed that the discharge process in the hospital consistently lie within the first 20 percent problem group.

A scope for improvement in the discharge process becomes utmost priority towards a patient centric approach.

So far no attempt has been made to assess the discharge process and delay causing areas for the discharge process in the hospital.

Need arises for assessment and evaluation of the discharge process and address the delay causing areas of the hospital for improvising the process, quality and patient satisfaction.

C. Objectives:

In view of the problem statement the objectives were set

1. To understand the discharge process at Dr. Malathi Manipal Hospital- Bangalore
2. To estimate the turnaround time for the discharge process at the hospital
3. To assess the average time taken to complete discharge process at various levels of the discharge event
4. To address the problems for delay causing areas of discharge process

D. The study**I. Scope of the work**

Scope of the present study lies as it is customized to assess the discharge process of Dr. Malathi Manipal Hospital Bangalore.

Monitoring discharge turnaround time allows hospital to measure the efficiency of bed management and effectiveness of the operating process within the hospital.

Improving discharge turnaround time could help providers to better adhere to operating procedures and alter and adjust accordingly in order to improve quality in delivering service and achieve efficiency of the hospital.

This study includes all the departments and wards which are directly involved in the discharge process namely- various nursing stations, discharge secretary desk, hospital pharmacy, billing department, insurance desk.

The study focuses on the discharge process alone and does not give emphasis to any other process of the hospital.

II. Approach

To accomplish these objectives, the following approach was adopted.

1. Study Design

Present study is based on the Cross-sectional survey, observational, descriptive study of 211 discharges from various wards of the hospital.

2. Methodology

2.1. Data collection period: The data collected between mid April to Mid May 2012 for three weeks.

2.2. Data collection:

2.2.1. Secondary data: Review of literature- Various studies related directly or indirectly to the objective of the present study have been reviewed.

The secondary data were collected from various sources that include journals, Articles, Reports of various surveys, and relevant websites quoted at the reference section.

Secondary data was also obtained from HIMS TRAK about various time of discharge

2.2.2. Primary Data: To understand discharge process, interviews were conducted with the hospital staff and based on the information gathered; a flow chart of the discharge process at the hospital was prepared.

Primary data were collected for 211 discharges with the help of tabulated TAT time assessment sheet which were filled with the real time during each discharge event by the hospital staff.

The captured time were cross checked by the help of hospital information management system software TRAK.

2.3. Sampling method: this study used a sample of convenience.

The samples size was determined by the number of discharges for duration of three weeks from the hospital between mid April to mid May 2012, hence determined samples were under consideration of following inclusion and exclusion criteria.

2.3.1. Inclusion: all the inpatient discharges

2.3.2. **Exclusion:** discharge process of casualty admissions, daycare process/procedure admissions, newborn admission were excluded from the TAT data collection. Event of death during hospitalization and discharge against medical advice cases were excluded from the present study.

Patients discharging from the hemO-dialysis ward and of chemotherapy session patients also were excluded from the study.

2.4. **Sample Size:** 211 discharges from various wards of the hospital

2.5. **Study respondents:** The departmental staffs who were directly involved in the discharge process were considered.

For the purpose of the study, the discharge processes at various departmental levels were divided into sub units. The wards were assigned to the respective nurse station to capture the initiation time of the discharge process.

2.5.1. **Selection of Respondents:**

All staffs working in areas related to the discharge process were selected as respondents. The following were the departments which were considered as subunits from where the respondents were selected.

- Wards and nursing station

Table (1): Wards and nursing station at Dr. Malathi Manipal Hospital- Bangalore

	Wards	Nursing station	Floor
1	Special and semi special, Private	First floor Nursing station	Daffodil floor
2	Special and semi special, Private	Second floor nursing station	Tulip floor
3	General ward	General ward nursing station	Wild flower floor
4	Private, standard and deluxe wards	Third floor nursing station	The Orchid floor

- Discharge secretary desk
- Hospital pharmacy
- In patient billing department
- Insurance desk

Table (2): Number of discharges selected

Nursing station	floor of discharge	Number of discharges selected
First floor Nursing station	Daffodil floor	69
Second floor nursing station	Tulip floor	70
General ward	Wild flower floor	41
Third floor nursing station	The Orchid floor	31
Total		211

2.6. Data collection tool:

Permission to conduct the study was taken from the concerned authority of the health care facility.

A tabulated TAT time assessment sheet was developed with respect to the flow discharge process at various departments. The sheet consists of various entries for the capture of the time at each level of the discharge process (refer: Annexure I).

TAT time assessment sheets were circulated to all the responding units in the hospital.

Time captured from respective staffs involved in the discharge process at each level on real time basis.

2.7. Variables:**Table (3): dependent and independent variables**

Independent variable	Dependent variables
1. IP number 2. Floor of discharge 3. Department of discharge 4. Day of discharge 5. Payment mode 6. Name of the TPA/Insurance Company/Corporate 7. Length of stay	1. Average time taken by Nurse to initiate discharge process 2. Average time taken by Nurse to forward discharge documents for discharge summary 3. Average time taken by Nurse to forward activity sheet to pharmacy 4. Total time taken at nurse station to initiate discharge process 5. Time lag between Nurse station and discharge secretary in transferring documents 6. Average time taken to prepare discharge summary 7. Time lag between Discharge Secretary and Nurse station in transferring finalized discharge

	summary 8. Time lag between Nurse Station and pharmacy in transferring activity sheet 9. Average time taken by Pharmacy to process and update activity sheet 10. Time lag between Pharmacy and Billing Department in transferring documents 11. Average time taken by billing department to generate final bill 12. Average time taken to forward final bill to insurance desk 13. Average time taken by insurance desk to fax documents to TPA/insurance co/corporate 14. Average time taken by insurance desk to respond to shortfall 15. Average time taken by TPA/Insurance co/Corporate to process request 16. Average time taken by insurance desk to update authorization status to billing department 17. Total time taken by insurance desk to complete discharge process 18. Average time taken by patient to clear bill 19. Average time taken by ward nurse to handover discharge folder and give follow-up instructions 20. Average time taken by Patient to vacate floor 21. Total TAT for complete Discharge process
--	---

3. Data analysis:

Hence collected data were cross checked with the HIMS TRAK (Audit foot print) to confirm reliability of the data.

Entries were then made into Microsoft excel sheet. Statistical analyses of the data were performed using statistical package for social sciences (SPSS version 16.0, SPSS Inc., Chicago, IL, USA).

3.1. **Statistical tools used:** Mean, median, standard deviation, mean comparison, time series sequence charts, range, and variance.

III. Limitations:

Although efforts were made to capture entire discharge process flow of the hospital, due to time constraint the present study was limited to smaller sample size especially with respect to subunits of discharge process.

Possibility of the bias from the respondents likely to occur because of the Hawthorne effect and the factor may also a contributing for the deviation factor for time of discharge process.

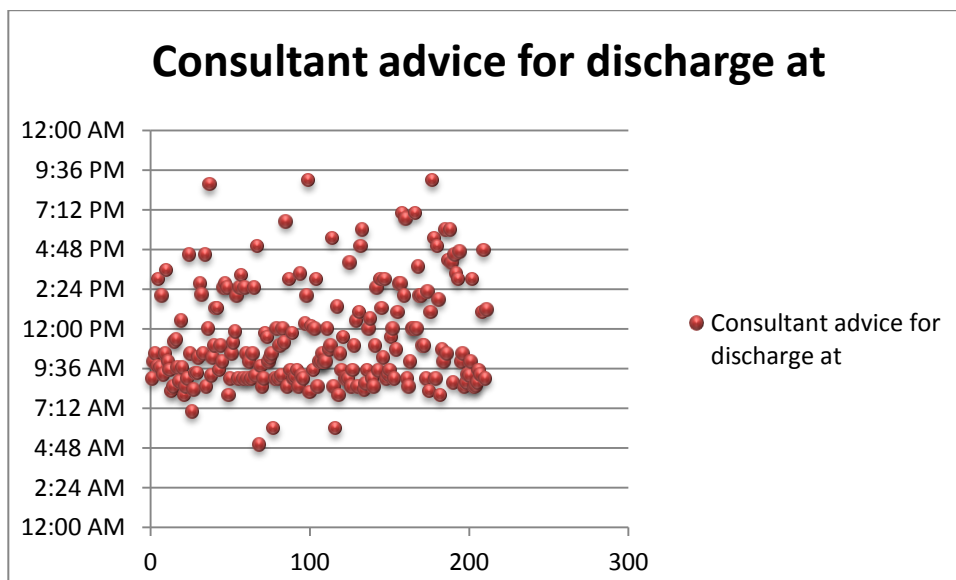
Chances of errors are likely to occur when capturing the data by the respondents due to digit preference; efforts have been made to minimize the error (using HIMS TRAK audit foot print of the hospital to cross check) efforts made to collect accurate data.

There could be other departments which are not directly involved discharge process but may contribute for the alteration in normal discharge flow, are not included under the present study.

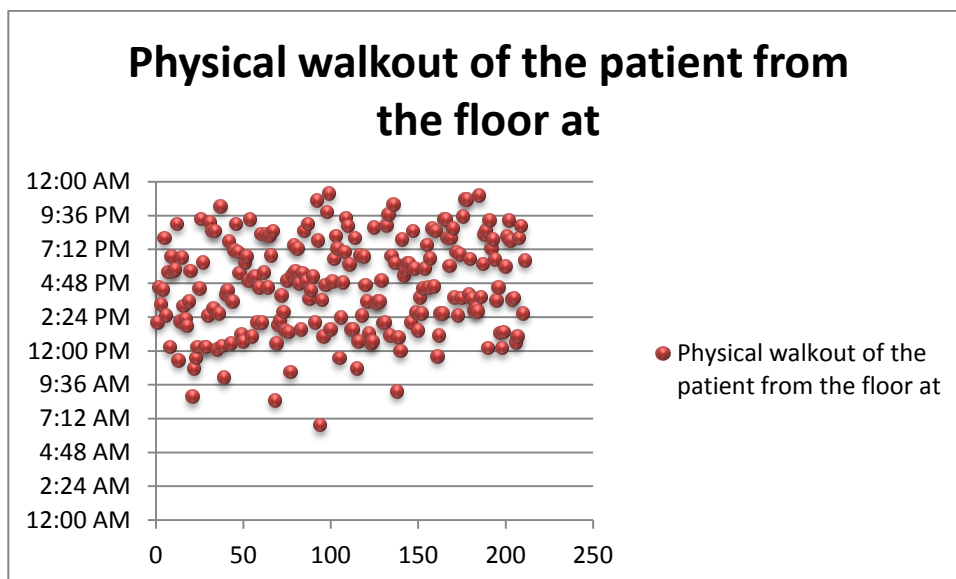
Results and Discussion:

1. Advice for discharge and physical walkout of patient:

Findings showed that consultants visit and advise for discharge between 5:00 AM to 9:00 PM and physical walkout of the patient from the floor is between 6:45 AM to 11:09 PM.



Graph (1): Time of advice for discharge by consultant.



Graph (2): time of physical walkout of patient from the floor

Although the advice for discharge and physical walkout of the patient is scattered throughout the day, the advice for discharge is concentrated between 8:30 AM and 12:00 PM.

The time of advice for discharge is one of the possible reasons for the bottle neck situations when discharge flows across various departments. Since most of the advices for discharge are limited to a particular time of the day the trafficking of cases at certain departments is inevitable to maintain the quality process. Perhaps, when the initiating process of discharge i.e. advice for discharge when distributed evenly across the day a constant easy flow of discharging patients can be maintained avoiding discharge traffic. More importantly, initiating process for discharge will be under the control of the hospital especially consultants. When initiating process, designed and planned carefully so as to distribute evenly throughout the day in consideration of availability of staff during a day, mode of payment etc.

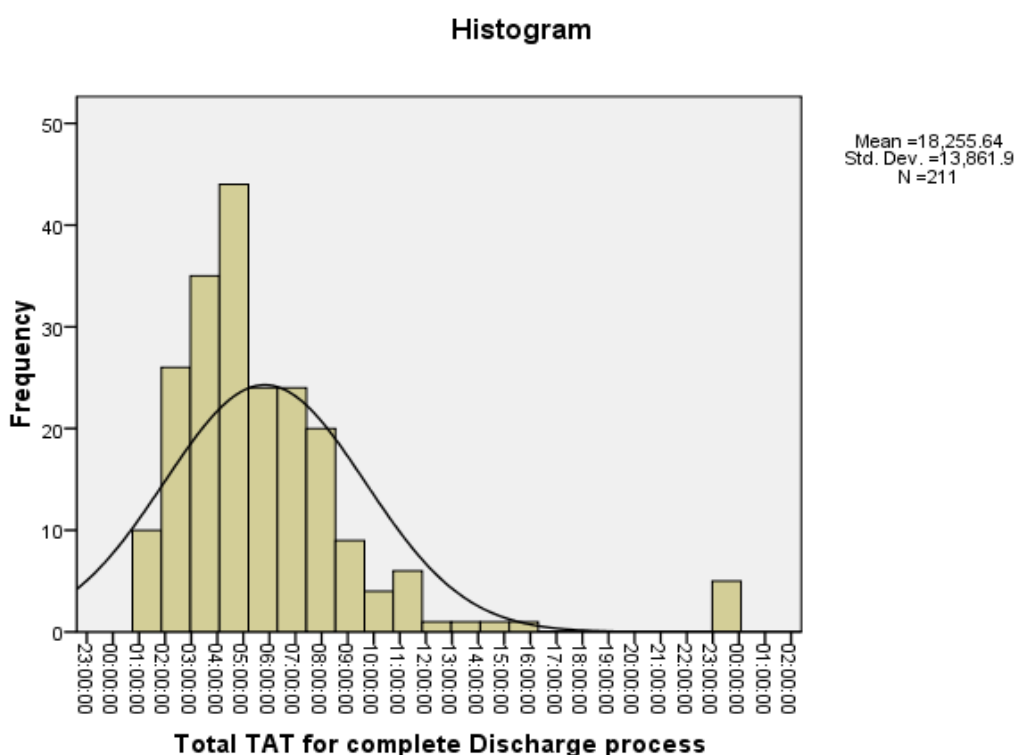
Another approach could be the availability of staff at the departments during traffic hours; either the hospital can plan for good number of staff to encounter the discharge traffic during specific hours of the day.

2. Physical walkout of the patient from the floor:

Physical walkout of the patient from the floor is another vital event in the discharge process, as it reflects the availability of the empty beds in the hospital. The walkout of the patient is mainly concentrated between 12:00 PM to 8:30 PM. Although, certain sub-steps of the discharge process are external in nature; to certain extent the physical walkout of the patients can be spread evenly much before 12:00 PM. This can be further understood by similar mechanism of generating 'Pull method' as

explained by Stephen Gilligan and Melanie Walters-To generate pull it is necessary to unblock the end of the process i.e. facilitate discharge and not to aggravate the situation by pushing from the front end, the admission process.¹³

3. Total turnaround time for discharge process:



Graph (3): Distribution of time taken for discharge process at Dr. Malathi Manipal Hospital –Bangalore.

Table(4) :Total TAT for complete Discharge
process

Mode of payment	Mean	N	Std. Deviation
Cash Payment	04:31	129	02:52
Insurance cover/cashless Payment	08:05	73	04:27
Corporate payment	06:00	9	01:49
Total	05:49	211	03:51

(Time in HH:MM)

Finding shows that the average time taken for the discharge of the patients from the hospital is 5 hours and 49 minutes. Of which 5 discharges were exceeding 24hours for discharging patient.

Discharge process of insurance cover/ cashless mode of payment patients were the highest of 8 hours and 5 minutes as compared to corporate and cash payment mode patients.

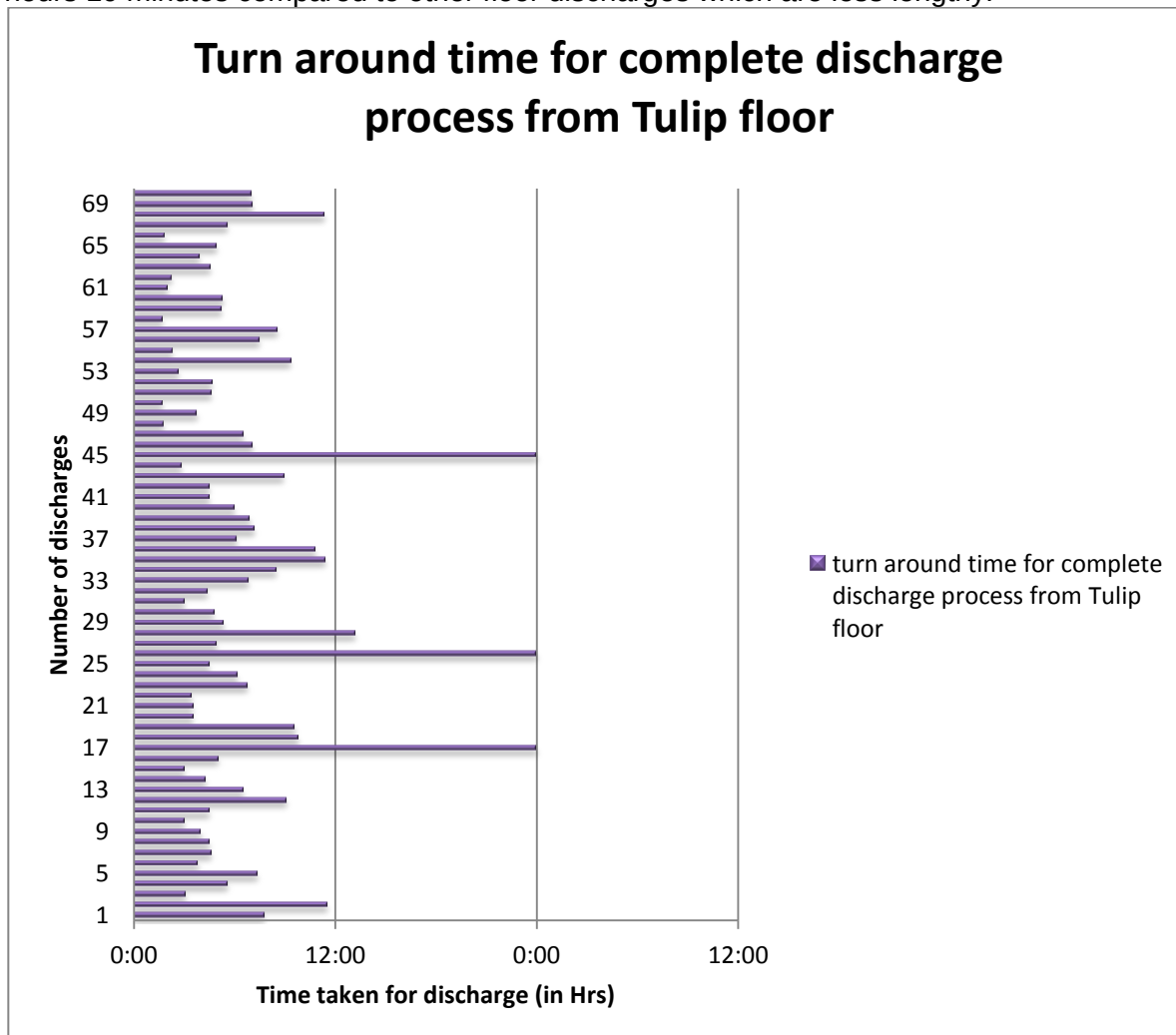
Often, other hospitals likely to suffer inefficiency in discharge process of insurance cover patients because of the involvements of TPA and other external factors. Streamlining the internal processes and insurance desk can dilute the inefficiency of the discharge process. Similar problem was faced by Sterling Hospital, Ahmedabad (Gujarat), where TPA patients were particularly dissatisfied by the extensive time required for discharge. TAT was exceeding 5 hours against 3 hours. A pilot Lean Six Sigma (LSS) project was carried for Improving TAT for Patient Discharge; the overall TAT for the patient discharge process was compressed from 300 minutes to 150 minutes. This enhanced the capacity of the hospital for admitting additional patients by 80. The hospital increased its profitability by approximately Rs 32 lakhs per annum.¹⁴

Table(5): Total TAT for complete Discharge
process floor/nursing station wise

Floor	Mean	N	Std. Deviation
First floor nursing station	06:10	62	04:08
Second floor nursing station	06:19	72	04:35
General ward nursing station	04:25	46	02:25
Third floor nursing station	06:01	31	02:33
Total	05:49	211	03:51

(Time in HH:MM)

Among the floor of discharge- second floor (Tulip floor) patients have to wait for 6 hours 19 minutes compared to other floor discharges which are less lengthy.



Graph (4): TAT for complete discharge process from patients of Tulip floor.

Of 72 discharges from the second floor, 3 discharges were exceeding 24 hours, 8 discharges were exceeding 9 hours, and 19 discharges were exceeding 5 hours for completion.

When compared with the mode of payment and admitted department with the total TAT for complete discharge process:

Table (6):Total TAT for complete Discharge
process mode of payment and department
wise

Admitted department	Mode of payment	Mean	N	Std. Deviation
Medicine	Cash Payment	03:16	6	01:36
	Insurance cover/cashless Payment	06:57	9	02:00
	Corporate payment	04:58	3	01:02
	Total	05:24	18	02:23
ObG	Cash Payment	05:00	18	02:40
	Insurance cover/cashless Payment	11:27	4	09:05
	Total	06:10	22	04:54
Orthopedic	Cash Payment	09:05	1	.
	Insurance cover/cashless Payment	16:27	2	10:39
	Total	13:59	3	08:39
Paediatrics	Cash Payment	03:54	7	01:45
	Insurance cover/cashless Payment	06:52	5	02:08
	Total	05:08	12	02:23
Surgery	Cash Payment	02:37	3	01:37
	Insurance cover/cashless Payment	06:12	5	01:45
	Corporate payment	06:35	1	.
	Total	05:03	9	02:20
Neurosurgery	Cash Payment	03:26	1	.
	Total	03:26	1	.
ENT	Cash Payment	04:09	2	02:36
	Insurance cover/cashless Payment	14:02	4	07:02

Total		10:44	6	07:33
Urology	Insurance cover/cashless	05:14	1	.
	Payment			
Total		05:14	1	.
Total	Cash Payment	04:21	38	02:24
	Insurance cover/cashless	08:56	30	05:38
	Payment			
	Corporate payment	05:22	4	01:10
Total		06:19	72	04:35

(Time in HH:MM)

Patients of ENT, ObG and orthopedics departments with insurance mode of payment were having the lengthier discharges.

4. Admitted department wise turnaround time for discharge process:

Table (7): Total TAT for complete Discharge process department wise

Admitted department	Mean	N	Std. Deviation
Medicine	05:18	58	02:39
ObG	06:02	59	04:14
Orthopedic	07:40	14	05:30
Paediatrics	05:12	31	04:07
Surgery	05:25	24	02:41
Neurosurgery	03:15	2	00:14
ENT	09:00	9	06:41
Urology	06:01	9	01:40
Plastic surgery	06:10	2	03:32
Dental	04:35	1	.
Gastroenterology	03:22	2	01:56
Total	05:49	211	03:51

(Time in HH:MM)

Among the department wise Obstetrics and gynecology department and Orthopedics department patients' discharge process were lengthier. Although other departments namely Urology, ENT and Plastic surgery discharges found lengthier, probably they may be exceptional cases due to lesser sample size. Of 9 ENT cases the major cause of delay was at the insurance desk of which about 5 hours 10 minutes were spent on waiting for the enhancement process from the TPA and about 3 hours and 42 minutes were spent by the insurance desk.

Of 59 ObG patients' 44 patients were with the cash payment mode and average time taken to clear the bill by patient was 1 hour and 52 minutes and time lag between nursing station and discharge secretary desk in transferring finalized discharge summary to nurse station was 54 minutes. Possible suggestion for the delay in time lag and improving the bill clearing time will be discussed in the further part.

Among the 15 insurance covered and corporate payment mode patients there was a delay in updating the authorized insurance status to billing department by insurance desk of about 1 hour 49 minutes.

About 1 hour 10 minutes were taken by patient to clear bill among 8 cash payment mode patients of orthopedic department and about 55 minutes and 50 minutes were time lag between nurse stations and discharge secretary desk and nurse station and pharmacy respectively.

5. Cashless/Corporate mode of payment wise total TAT for complete Discharge process

Table (8): Cashless/Corporate mode of payment and total TAT for complete discharge process

Name Of the TPA/Insurance Co./Corporate	Mean	N	Percentage	Std. Deviation
TTK	08:38	21	26%	05:28
MediAssist	06:37	27	33%	01:57
MDindia	08:24	2	2%	00:08
United healthcare	09:49	4	5%	02:18
e-meditech	13:21	3	4%	09:25
Bosch	05:25	7	9%	01:32
FGHI	07:06	3	4%	03:39
good health	05:55	1	1%	.
Vipul	07:52	2	2%	00:31
Bajaj Allianz	14:29	2	2%	13:25
ICICI Lombard	07:50	1	1%	.
star health	07:00	1	1%	.
BEML	09:00	1	1%	.
NABARD	07:00	1	1%	.
FHPL	08:55	3	4%	05:36
Dedicated healthcare	07:29	1	1%	.
Paramount	06:18	2	2%	03:08
Total	07:51	82	100%	04:17

(Time in HH:MM)

Among TPA, MediAssist TPA is more consistent in processing enhancement files and TTK healthcare services is less consistent in authorizing enhancement compared to MediAssist. Rest of the TPA and insurance companies need to be further assessed with larger sample size for accurate results. A Proper planning and streamlining of the hospital insurance desk is utmost important for the timely response from the TPA and insurance Company. Of several factors contributing to delay from the TPA side, some are linked with the received documents and content of the received documents from hospital. Insurance desk coordinator need to be thorough with the expected documents from the TPA and insurance company and

has to ensure with a checklist that all required documents are sent on time. Presently at Hospital insurance desk, although a checklist has been introduced, when checked was lacking real time updates and completeness. Of 4 shortfall raised out of TPA/cashless payment mode patients during enhancement process, 2 were for diagnosis and treatment related, 1 for the justification for higher charges and 1 for the policy mandated documents (Photo ID etc) which were responded with average time of 1 hour 38 minutes.

Table (9): time taken for various processes of discharge at insurance desk

	Average time taken by insurance desk to fax documents to TPA/insurance co/corporate	Average time taken by insurance desk to respond to shortfall	Average time taken by TPA/Insurance co/Corporate to process request	Average time taken by insurance desk to update authorization status to billing department	Total time taken by insurance desk to complete discharge process
N Valid	82	4	82	82	82
Missing	0	0	0	0	0
Mean	00:28	01:38	02:06	00:51	03:09
Std. Deviation	00:23	01:36	02:40	02:13	02:53
Minimum	00:00	00:20	00:00	00:00	00:00
Maximum	01:45	04:00	16:00	19:19	16:14

(Time in HH:MM)

Although, the number of shortfall generated during enhancement process is less in number, but reflects a vague picture of delay causing areas. When interviewed with insurance desk staff, the staffs were not aware of who should report to whom within the department. On observation it was noticeable that the subunit lacks structure, coordination between the staff and uneven distribution of work.

To cite one of the distant cause of delay and distribution of work, it was observed that while claim filing and mailing documents to the concerned TPA/insurance company, the insurance coordinator has to manually write the address of these companies on each envelope which is sent on a regular basis. Though the task looks simpler; is a contributor for wastage of man work hours. Simple interventions like pre-printed labels and addressed rubber stamp of frequently mailing companies can preserve extra work of the insurance coordinator that can be invested on productive work.

Hospital billing software fails to separate and segregate the medical and non medical expenses from the final bill, which has to be manually segregated and marked by

insurance coordinator. The list of non medical expenses are limited and predefined and enlisted by all the TPA/insurance companies. If when the hospital billing software is enabled to separate and list out non medical expenses from bill, this can promote faster processing of enhancements at TPA and can save manually marking time at insurance desk at hospital.

6. Discharge process sub-unit wise average time for discharge process:

Table (10): Time taken at various subunits of discharge process								
		Total time taken at nurse station to initiate discharge process	Average time taken by Pharmacy to process and update activity sheet	Average time taken by billing department to generate final bill	Total time taken by insurance desk to complete discharge process	Average time taken by patient to clear bill	Average time taken by Patient to vacate floor	Total TAT for complete Discharge process
N	Valid	211	211	211	82	211	211	211
	Missing	0	0	0	0	0	0	0
Mean		00:41	00:24	00:30	03:09	01:11	00:19	05:49
Std. Deviation		00:36	00:27	00:47	02:53	02:01	00:17	03:51
Minimum		00:00	00:00	00:00	00:00	00:01	00:00	00:45
Maximum		04:00	02:20	07:11	16:14	21:05	01:25	23:59

(Time in HH:MM)

7. At discharge secretary desk:

Table (11): Time taken for discharge process at discharge secretary desk

		Time lag between Nurse station and discharge secretary in transferring documents	Average time taken to prepare discharge summary	Time lag between Discharge Secretary and Nurse station in transferring finalized discharge summary
N	Valid	211	211	206
	Missing	0	0	5
Mean		00:55	01:37	01:11
Std. Deviation		02:33	02:19	02:50
Minimum		00:00	00:00	00:00
Maximum		19:56	20:00	21:45

Table (12): Average time taken to prepare discharge summary

Admitted department	Mean	N	Std. Deviation
Medicine	01:20	58	02:24
ObG	01:44	59	01:28
Orthopedic	01:10	14	01:06
Paediatrics	01:20	31	01:08
Surgery	01:23	24	01:10
Neurosurgery	00:49	2	00:50
ENT	03:30	9	05:00
Urology	01:15	9	00:49
Plastic surgery	00:48	2	00:32
Dental	04:00	1	.
Gastroenterology	10:32	2	13:22
Total	01:37	211	02:19

(Time in HH:MM)

Of 211 discharges, 5 discharged patients have not given the discharge summary at the time of discharge due to delay at discharge secretary desk. Among them 1 case each from medicine, ObG, ENT departments and 2 from surgery departments.

Cause for delay when explored the reasons for delay were: 2 files were received after discharge, 2 were delay due to doctor was in OT and 1 case was due to delay in validating discharge summary with doctor signature.

7.1. Initiating process:

When interviewed discharge secretary it was found that possible delay for initiating preparation of discharge summary is non availability of initial assessment part on case sheets in recent days for which the files shuttle between the nurse station, doctor and Discharge secretary desk.

Another reason for delay in initiating process is following of low order of priority. The files are not always given priority on first in first out basis,

many a times files are prioritized on the intensity of the pressure from the staff to prepare discharge summary.

7.2. Delay in preparation of discharge summary:

One of the prime reasons for the delay in preparing discharge summary is illegible hand writing. Although discharge summary if prepared on time, welcomes corrections and further reviews for the same case.

Another reason for the delay in the preparation of discharge summary for surgical management patients is because of the OT notes. Presently the OT notes are hand written and delay more likely to occur due to illegible OT notes.

Non-availability of the consultants and assistant doctors for correction and validation with signature of discharge summary is being ranked 2nd by discharge secretary as cause of delay for the finalizing discharge summary.

Either when the consultant if in OT or in OPD hours then it is difficult to approach for the validation purpose.

For the above said problems, conversion of manual documents into EMR system, system update of the initial assessment part and OT notes into the HIMS, time much before discharge would help to reduce the discharge summary preparation time.

Decentralization of the validation process to responsible assistant consultants and duty doctors with the consent of the consultant would help the time lag between finalization and validation of discharge summary.

Table (13): Average time taken to prepare discharge summary on day of discharge wise

Day of Discharge	Mean	N	Std. Deviation
Sunday	04:03	19	06:32
Monday	01:26	39	01:12
Tuesday	00:51	23	00:47
Wednesday	01:35	32	01:11
Thursday	01:49	27	01:22
Friday	01:11	27	00:50
Saturday	01:18	44	01:06
Total	01:37	211	02:19

(Time in HH:MM)

Average time taken to prepare discharge summary is more on Sunday possibly because of unavailability of the discharge secretary and discharge summary is prepared at the registration counter.

There is a need for the arrangements to overcome the delay in preparation of discharge summary on Sunday discharging patients.

Table (14): Average time taken to prepare discharge summary various floor of discharge wise

Floor	Mean	N	Std. Deviation
First floor nursing station	01:57	62	03:13
Second floor nursing station	01:27	72	02:17
General ward nursing station	01:25	46	01:15
Third floor nursing station	01:38	31	01:20
Total	01:37	211	02:19

(Time in HH:MM)

Although average time taken to prepare discharge summary from various nursing station follow similar lengths, preparing discharge summary for files from first floor discharge floor are not consistent.

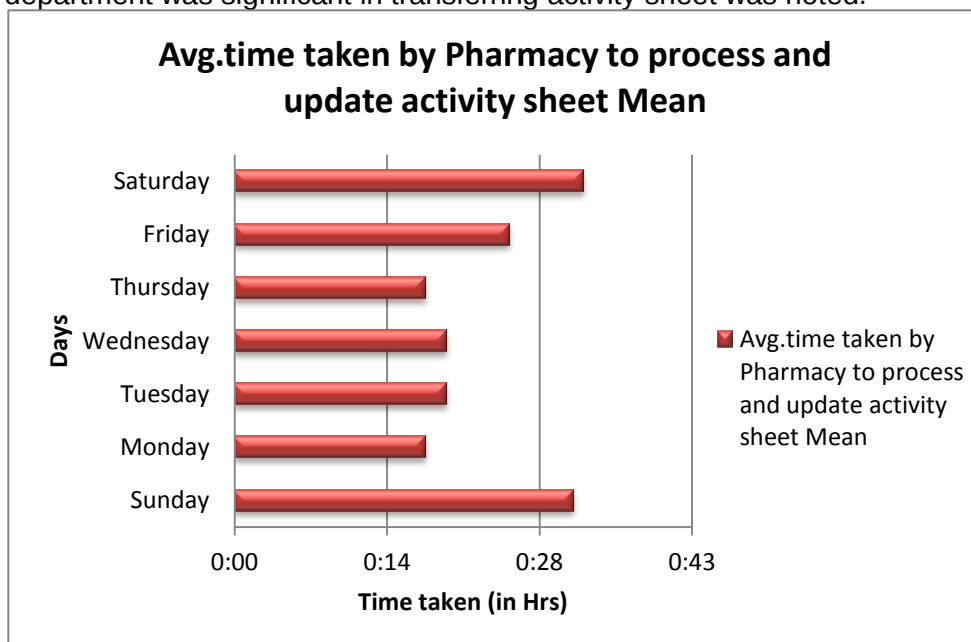
8. At pharmacy:

Table (15): Time taken by hospital pharmacy in discharge process

	Time lag between Nurse Station and pharmacy in transferring activity sheet	Average time taken by Pharmacy to process and update activity sheet	Time lag between Pharmacy and Billing Department in transferring documents
N Valid	211	211	211
Missing	0	0	0
Mean	00:20	00:24	00:27
Std. Deviation	01:02	00:27	00:31

(Time in HH:MM)

Physically, although the pharmacy and billing department are on the same floor and adjacent to one another, time lag (of 27 minutes) between pharmacy and billing department was significant in transferring activity sheet was noted.



Graph (5): time taken for discharge process at pharmacy-day wise

Average time for updating activity sheet was found more on Friday, Saturday and Sunday; the hospital pharmacy need to be well prepared in for these days of week to reduce the delay in discharge process.

9. At billing department:

Table (16): Time taken by billing department for discharge process

Mode of payment		Time lag between Pharmacy and Billing Department in transferring documents	Average time taken by billing department to generate final bill	Average time taken to forward final bill to insurance desk
Cash Payment	Mean	00:23	00:24	
	N	129	129	
	Std. Deviation	00:23	00:37	
Insurance cover/cashless Payment	Mean	00:33	00:41	00:28
	N	73	73	73
	Std. Deviation	00:42	01:02	01:55
Corporate payment	Mean	00:35	00:21	00:11
	N	9	9	9
	Std. Deviation	00:30	00:19	00:30
Total	Mean	00:27	00:30	00:26
	N	211	211	82
	Std. Deviation	00:31	00:47	01:49

(Time in HH:MM)

Table (17): Average time taken by billing department to generate final bill admitted department wise

Admitted department	Mean	N	Std. Deviation
Medicine	00:22	58	00:25
ObG	00:32	59	00:46
Orthopedic	00:49	14	01:01
Paediatrics	00:34	31	01:19
Surgery	00:32	24	00:36
Neurosurgery	00:30	2	00:36
ENT	00:32	9	00:48
Urology	00:27	9	00:35
Plastic surgery	00:10	2	00:00
Dental	00:52	1	.
Gastroenterology	00:19	2	00:07
Total	00:30	211	00:47

(Time in HH:MM)

Of various departments of admission, preparing bill for the orthopedics, ObG and pediatric patients were lengthier. When interviewed with the billing staff the possible reasons for delay were because of the involvement of the various steps and crosscheck with usage of instruments, implants, CRM and delivery packages were noticed.

Table (18): Average time taken by billing department to generate final bill mode of payment wise

Mode of payment	Mean	N	Std. Deviation
Cash Payment	00:24	129	00:37
Insurance cover/cashless Payment	00:41	73	01:02
Corporate payment	00:21	9	00:19
Total	00:30	211	00:47

(Time in HH:MM)

The spread of the bill generation time for the insurance cover/cashless patients are not evenly distributed reflects poor consistency in the bill generation time for insurance patients.

10. Time lag between departments in transferring documents:

Table (19): time lag between various subunits in discharge process

	Average time taken by Nurse to initiate discharge process	Time lag between Nurse station and discharge secretary in transferring documents	Time lag between Discharge Secretary and Nurse station in finalized discharge summary	Time lag between Nurse Station and pharmacy in transferring activity sheet	Time lag between Pharmacy and Billing Department in transferring documents	Average time taken to forward final bill to insurance desk	Average time taken by insurance desk to update authorization status to billing department	Average time taken by ward nurse to handover discharge folder and give follow-up instructions
N Valid	211	211	208	211	211	82	82	211
Missing	0	0	3	0	0	0	0	0
Mean	00:19	00:55	01:11	00:20	00:27	00:26	00:51	00:22
Std. Deviation	00:21	02:33	02:49	01:02	00:31	01:49	02:13	00:32
Minimum	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00
Maximum	02:09	19:56	21:45	12:08	04:52	16:25	19:19	04:30

(Time in HH:MM)

Time lag reflects break in the flow of the process. A reduction in the break of flow indicates efficiency of the process. Interdepartmental coordination is of prime importance to maintain easy flow of the process across various departments. More than one department has to coordinate between one another for uninterrupted flow of patients across various departments especially in hospitals.

When flow of discharges observed, significant time lag between each subunits of discharge was noticed.

Time lag at nurse station occurs because of the conflicting information about the discharge of the patients. Information about the discharge process was not readily available at the nurse station even on the day of the discharge of the patient. It was observed that many time the ward nurse was with vague idea, whether the patient is getting discharge on the day or not, until it is clarified by the consultant. The asymmetry in the information between the consultant and the ward nurse is the contributing factor for the time lags at the nursing station.

If when the information about the patient discharges process is prior planned on the day before discharge, shared among the staff, a readiness for discharging the patient can be achieved.

Further, the information if clearly communicated to the patient attendants the delay in the bill clearance could be reduced among the cash payment mode patients.

Table (20): Time lag between Discharge Secretary and Nurse station in transferring finalized discharge summary

Floor	Mean	N	Std. Deviation
First floor nursing station	01:25	62	03:39
Second floor nursing station	01:01	69	02:36
General ward nursing station	00:39	46	00:37
Third floor nursing station	01:52	31	03:18
Total	01:11	208	02:49

(Time in HH:MM)

A significant time lag was noticed between the nurse station and discharge secretary desk while transferring the finalized discharge summary to nurse station. Reduction in this time lag can influence reduction in the time lag occurring for handing over discharge folder and follow-up instructions to the patient, since the preparation of the discharge folder and follow-up instruction can be kept ready well before time.

The time lag of transferring finalized discharge summary to general ward nurse station is lesser might be because of constant pressure of patients on ward nurse about the completion of discharge process, since the stay at general ward is not much comfortable and reason for admission in general ward are due to financial constraints of patient, when compared to other wards.

Time lag between pharmacy and billing department and time lag between billing department and insurance desk further can be reduced by streamlining the process of transferring of files between departments and timely initiation of the process at respective subunits.

Updating of authorization status by insurance desk to billing department has significant time lag time of 51 minutes and to be considered while streamlining the process at insurance desk.

11. Patient's angle:

Table (21): Average time taken by patient to clear bill

Mode of payment	Mean	N	Std. Deviation
Cash Payment	01:26	129	02:26
Insurance cover/cashless Payment	00:41	73	00:53
Corporate payment	01:32	9	01:38
Total	01:11	211	02:01

(Time in HH:MM)

Average time taken by a cash payment mode patient to clear the bill once the final bill is generated is 1 hour and 26 minutes.

The scope of the preparing the patient for the discharge lies with the delay in clearing bill. Discharge process need to be planned with patient centric approach.

The planning of the discharge process is considered as one among the best practice among developing health service approach to admission and discharge process. Several hospitals practice 'Discharge Board' system-to track progress and status of activities required for every patient. Barnes-Jewish Hospital is a large urban teaching hospital in St. Louis, Missouri (9,385 employees, 1,707 physicians, 914 residents/interns/fellows, 1,106 staffed beds, and 52, 605 admissions in 2006) is one among those hospital which practices discharge board in wards¹⁶. A similar practice can be implemented in the hospital wards. The board can be sub divided into phases which indicate the improvement of the patient from the admission till date and the flow of the patient during the hospital stay. This will enhance the sharing of discharge information with the patient and patient attendants and helps to prepare patient for the discharge event. From the patient's angle, when patient recedes towards discharge phase, patient can prepare himself to clear the bill and plan about vacation from hospital and psychologically be ready for discharge.

Conclusion:

The present study aims at understanding and analyzing the discharge process at Dr. Malathi Manipal Hospital- Bangalore, by using the turnaround time as a tool for evaluation of efficiency discharge flow. The study reflects a customized analysis of discharge process at the hospital in consideration of various departments which were directly involved in the discharge process. The study point-outs the possible delay causing area in discharge process and recommends suggestions to overcome the delay.

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Annexure (I):

1. TAT time Data collection Sheets:

1.1. At nursing station:

Date: _____								
Discharge process Turnaround time assessment Sheet								
Process	At ward	At Nursing station						
	Consultant advice for discharge at	Nurse forwards discharge documents to discharge secretary at	Nurse forwards activity sheet to pharmacy at	Discharge summary received to nursing station at	Clearance slip received to nursing station at	Discharge folder handed over to patient at	Follow-up instructions to patient at	Physical walkout of the patient from the floor at
UHID no	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)

1.2. At discharge secretary desk:

Date: _____				
Discharge process Turnaround time assessment Sheet				
Process	At discharge secretary desk			
	Discharge documents received for discharge summary preparation at	Discharge summary finalized at	Discharge summary sign off by consultant at	Discharge summary sent to nursing station at
UHID no	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)

1.3. At pharmacy:

Date: _____			
Discharge process Turnaround time assessment Sheet			
Process	At pharmacy		
	Activity sheet received to pharmacy at	Activity sheet cross checked/updated at	Activity sheet forwarded to billing dept at
UHID no	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)

1.4. At billing department:

Date: _____						
Discharge process Turnaround time assessment Sheet						
Process	At Billing counter					
	Activity sheet received at billing counter at	Activity sheet cross checked/updated at	Final bill prepared at	Information to patient/attendant for payment at	Bill cleared at	Bill clearance slip issued at
UHID no	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)

1.5. At insurance desk:

Date: _____							
Discharge process Turnaround time assessment Sheet							
Process	At insurance desk						
	Discharge documents received at	Discharge documents faxed to TPA at	Discharge summary forwarded to nursing station at	Short fall received at	Short fall responded at	Authorization letter received at	Authorization status intimated to billing department at
UHID no	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)	Time(AM/PM)

1.5.1. At insurance desk:

Date: _____					
Discharge process Turnaround time assessment Sheet					
Status of the request	At Insurance desk				
	Initial authorization received	Under query due for query reply	Query reply sent due for authorization	Interim enhancement received due for final authorization	Due for final authorization
UHID no	KINDLY TICK MARK WHICHEVER IS APPLICABLE				