Summer Training at
Apollo Hospitals Enterprise Ltd., Bilaspur, Chhattisgarh
(April 3 to June 2, 2017)

To Assess Factors Affecting Average Length of Stay, Patient Flow Management in Out Patient Department and Bed Management

By
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Under the guidance of
Dr. Tanjul Saxena

MBA Hospital & Health Management
2016-2018

Institute of Health Management Research
The IIHMR University, Jaipur
2017

INSTITUTE OF HEALTH MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that Mr./Ms. **Shekha D Das** has undergone summer training in (Organization name - **Apollo Hospitals Enterprises Limited, Bilaspur**.) from 3rd April to 2nd June 2017.

The candidate herself/himself completed the project assign to his/her during summer training. Her approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish him/her success in all her future endeavors.

Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affair)

The IIHMR University, Jaipur

Name of the Mentor- Dr. Tanjul Saxena

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Apollo HOSPITALS TOUCHING LIVES BILASPUR

NABH ACCREDITED

Ref. AHB/HRD/Intern/June-17/03

02 June 2017

To Whom So Ever It May Concern

This is to certify that Dr. Shekha D Das student of Institute of Health Management Research has successfully completed her summer training for a period of 2 (two) months in the Department of Operations At Apollo Hospitals Bilaspur From 03 April 2017 to 02-June-2017 and under taken the project titled "Assessment of factors affecting the Management of Patient flow, ALOS & Bed Management/ Utilization.

Her performance during internship was Good.

We wish her success in all the future endeavors.

Mr. Devesh Gopal
HOD Operations

APOLLO HOSPITALS ENTERPRISE LTD. Apollo HOSPITALS TOUCHING LIVES BILASPUR (C.G.)

Dr. Vishal Goyal
Chief Operating Officer

Dr. Vishal Goyal
Chief Operating Officer
Apollo Hospitals Bilaspur

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ACKNOWLEDGEMENT

I extend my sincere gratitude to **Dr. Vishal Goyal,** Chief Operating Officer and **Dr. P. K. Panda**, Medical Superintendent and Head of Diagnostics, for giving me the opportunity to do this study and undergoing process of learning at **APOLLO HOSPITALS, BILASPUR**. I thank them for all the trust and faith they posed in me and I only hope that I have been able to live up to their expectations. Their guidance and support was helpful in enhancing my work.

I extend my sincere gratitude towards, **Mr. Devesh Gopal,** Senior Manager Operations, who has been my mentor for the summer internship program and has been instrumental in helping me shape this study in a desirable way.

I would also extend my gratitude towards the entire staff of the hospital for their guidance and support.

I would like to express my sincere thanks to **Dr. S.D. Gupta,** Director IIHMR University, **Col. Dr. Ashok Kaushik,** Dean IIHMR University, **Dr. Tanjul Saxena (mentor),** and all my faculty members for the proper guidance and cooperation extended by them. I am also grateful to my parents, my family and friends for giving me moral support.

Dr Shekha D Das

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ACRONYMS/ABBREVIATIONS

ALOS- Average Length of Stay

A&E- Accident & Emergency

CAPD- Continuous Ambulatory Peritoneal Dialysis

CCU- Cardiac Care Unit

COO- Chief Operating Officer

CRA- Customer Relation Assistant

CRRT- Continuous Renal Replacement Therapy

CT Scan-Computed Tomography Scan

CT SDICU- Computed Tomography Intensive Care Unit

ERCP- Endoscopic Retrograde Cholangiopancreatography

HMIS- Hospital Management Information System

ICU- Intensive Care Unit

MICU- Medical Intensive Care Unit

MRI- Magnetic Resonance Imaging

NABH- National Accreditation Board for Hospitals & Healthcare Providers

NICU- Neonatal Intensive Care Unit

NIV Ward- Non Invasive Ventilation Ward

OPD- Out Patient Department

OT- Operation Theatre

PAC- Post Anesthesia Care

SDICU- Step down Intensive Care Unit

SICU- Surgical Intensive Care Unit

PREFACE

Summer internship is an integral part of the MBA curriculum. As a part of the course; students of first year are required to undergo summer placement at any reputed organization to get in depth exposure of various departments in the organization and better understanding of the health care delivery system and its functions.

The major objectives of the summer training program as follows:

a) To have in-depth knowledge of different field of operation of a hospital/health care organization, etc.
b) To learn the roles and responsibilities of different functionaries and organizations effort for manpower development and deployment.
c) To observe the logistic system
d) The inputs for effective communication and marketing of healthcare institutions
e) To get deep insight of financial and budget management
f) To understand bottleneck and impediments encountered at different level of health sector in terms of human resources, supply management, change behavior & communication and maintaining information system, disease profile and components of effective patient care

ABOUT THE ORGANISATION

VISION *"To make India as a global healthcare destination."*

MISSION *"Our Mission is to bring healthcare of International Standards within the reach of every individual. We are committed to the achievement and maintenance of excellence in education, research and healthcare for the benefit of humanity."*

Apollo Hospitals, Bilaspur was established on 23rd October 2001. It was the first multi-specialty tertiary care hospital in the state of Chhattisgarh. The 300-bed hospital (including 50 bedded ICU) is set on a lush green of 19 acre-campus.

Apollo Hospitals, Bilaspur has completed over 1786 cardiothoracic surgeries (including Pediatric) and 16648 Cardiac interventional procedures with a success rate of 98.5%.

The hospital has performed over 67761 major and 29319 minor surgeries which are:

- Performed over 4590 Neuro and Spinal Surgeries.
- Performed over 25360 orthopedic surgeries including knee replacement.
- Performed over 5459 Laparoscopic surgeries.
- Performed over 30137 eye surgeries and laser treatment.
- Performed 12534 Urology Surgeries.
- Performed over 21387 General Surgeries and Oncology Procedures.
- Performed over 6718 Plastic Surgeries.
- Performed over 2643 Dental and Maxillofacial Surgeries.

MEDICAL MILESTONES

Introduced for the first time in Chhattisgarh.

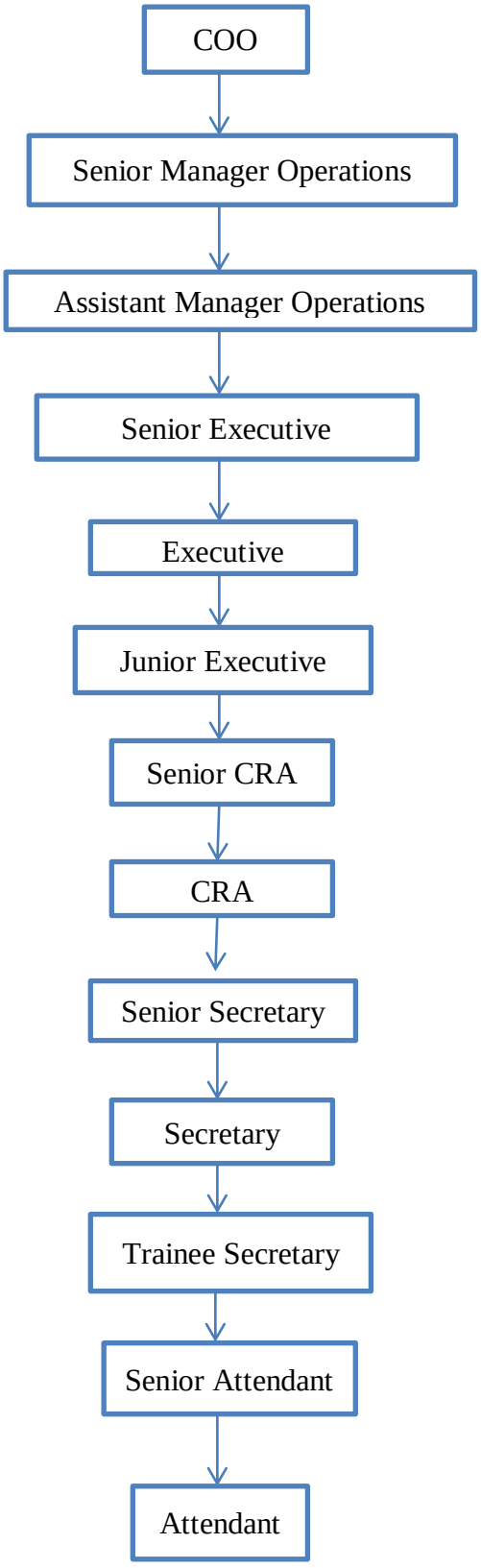
- Total arterial revascularization surgery was performed.
- Telemedicine was introduced for the first time in Chhattisgarh
- Modern retinal laser surgery machine installed.
- 1082 Falciparum Malaria patients treated with multi-organ failure
- Performed more than 118598 Dialysis and more than 352 CAPD (Continuous Ambulatory Peritoneal Dialysis)
- 33646 Gastroenterological procedures (including ERCPs)
- Speech therapy facility.
- CAPD
- 6810 Radiotherapy sitting.
- Holistic Knee Clinic
- Pacemaker on Neonate
- New 16 slice CT Scan
- New 1.5 Texla MRI
- New Cath Lab (Innova 2100 IR Model)
- Angioplasty
- CRRT
- NABH ACCREDITED

- **SPECIALITIES**

  - Anaesthesiology
  - Apollo Heart Institute
  - Cardiothoracic Surgery
  - Interventional Cardiology
  - Non-Invasive Cardiology
  - Apollo Institute of Neurosciences
  - Neurology
  - Neurosurgery
  - Critical Care
  - Dental & Maxillofacial Surgery
  - Dermatology
  - Dietetics &Nutrition
  - Ear, Nose & Throat
  - Emergency &Trauma Care
  - Endocrinology
  - Gastroenterology
  - Gynecology & Obstetrics
  - Kidney Transplants
  - Laboratory Services
  - Nephrology
  - Oncology
    - Medical Oncology
    - Radiation Oncology
    - Surgical Oncology
  - Ophthalmology
  - Orthopedic Surgery
  - Pediatrics &Neonatology
  - Physiotherapy & Rehabilitation

- Plastic & Burn Management
- Psychiatry & Psychology
- Respiratory & Sleep Medicine
- Urology & Andrology
- Spine Surgery
- Advanced Surgery
- Minimal Access Surgery
- Surgical Gastroenterology

ORGANOGRAM


COO
Senior Manager Operations
Assistant Manager Operations
Senior Executive
Executive
Junior Executive
Senior CRA
CRA
Senior Secretary
Secretary
Trainee Secretary
Senior Attendant
Attendant

OBSERVATIONAL LEARNING

FRONT OFFICE

Front Office is the face of the hospital. Front Office staff greets patients and visitors with a 'Namaste'. The purpose of the front office is to build professional and courteous relationship with clients and co-workers while handling multiple tasks at a time. It is the stepping stone of a hospital and projects the quality of the hospital.

GENERAL FINDINGS-

- The staff of the front office greets the visitors/patients with a 'Namaste'.
- Visitors/patients are sent to the Health Checkup Desk for counseling by the doctor of the given department.
- In cases where patients come with prior appointment with the consultant are sent to the outpatient department for consultation.
- The Bed Status of all the wards in the hospital is updated to the front office via intercom.
- Circulation of daily bulletins. It consists of

- Three types of patients are there-
  A) New patients- who are seeking consultation/treatment for the first time.
  B) Follow up patients- patients who have been treated within seven days
  C) Old patients- who are seeking treatment after seven days of treatment as per billing date.

EMERGENCY

The emergency department provides treatment for emergency medical care. It is also known as an accident & emergency department (A&E) or casualty department. It provides immediate treatment to acute care patients admitted without prior appointment or by ambulance.

GENERAL FINDINGS

- It consists of reception, patient waiting hall, three emergency rooms and one labour room.
- Patient is admitted and the attender is sent to the front office for registeration and admission procedure.
- In case of Credit patients the credit letter and eligible grade of the patient is checked.
- Availability of beds is checked. Up gradation of beds is done in case of unavailability of beds.

OUT PATIENT DEPARTMENT

An outpatient department or outpatient clinic is the part of a hospital designed for the treatment of outpatients, people with health problems who visit the hospital for diagnosis or treatment, but do not at this time require a bed or to be admitted for overnight care. Modern outpatient departments offer a wide range of treatment services, diagnostic tests and minor surgical procedures.

FUNCTIONS OF OUTPATIENT DEPARTMENT

- Early Diagnosis
- Ambulatory and Domiciliary Treatment
- Referral for Admission
- Follow up Care
- Rehabilitation
- Health Promotion
- Training of Staff and Students
- Preventive activities

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FIRST & SECOND FLOOR

STUDY AREA- Second floor of the hospital consists of Wards (Semiprivate, private, deluxe, super deluxe and suite), ICU (Medical ICU, Surgical ICU, Neurosurgical ICU, Nephro ICU, CT Post ICU, and CT SDICU), OT, Cath Lab, PAC, General wards (A &B) Semi, Burn unit, Isolation ward, NICU, MCH, Dialysis Unit and Nursing Station.
STUDY PARTICIPANTS- Floor In charge, nursing staff, Housekeeping staff, Doctors, Nutritionist, and Visitors/Patients.

GENERAL FINDINGS-

- Daily visit to the patient by the concerned consultant.
- Nutrition guide to all the patients.
- Cleaning and disinfecting patient care is provided.
- Delay in discharge process.
- Feedback form is submitted by the patient before discharge.

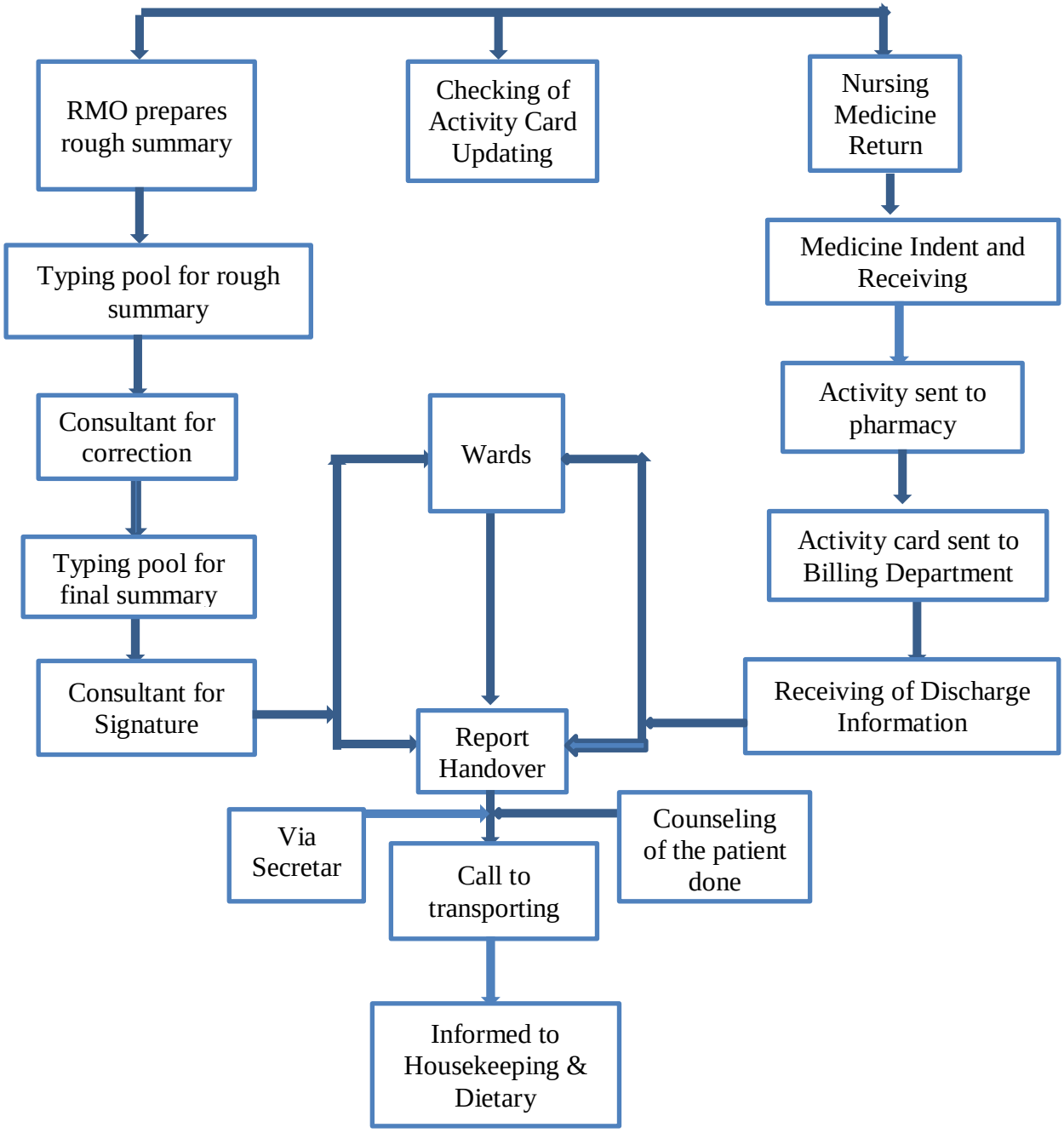
CONCLUSION & SUGGESTIONS

- Delay in discharge process is one of the major issues faced by the patients.
- Shortage of beds in general ward.
- Non-availability of cardiac beds in general ward.
- Application of HMIS system.
- To increase number of beds in cardiac and general wards.

TYPING POOL AND HEALTH CHECKUP DESK

TYPING POOL- Typing pool consists of group of typists who work for the organization. Typing pool provides all (Discharge & Death summary), Reports of Radiology, Cardiology, Gastroenterology & Histopathology) of in-patients and out-patients coming to the hospital

CONSULTANT ORDER DISCHARGE



GENERAL FINDINGS

Two types of reports are generated-

IPD Report- Four copies are generated (one for the concerned department for treatment, one for Medical Record Department, one for the Typing pool and one for the patient).
OPD Report- Three copies are generated (one for Medical Record Department, one for the Typing pool and one for the patient).

HEALTH CHECKUP DESK- Health check-up desk provides continuous health surveillance. It includes thorough physical examination, variety of tests depending on the age and sex and health of the person. It also provides counseling to the patients who are apprehensive about treatment.

GENERAL FINDINGS-

It contains various packages which includes basic health lab tests, special heart checkup for men and women, child health check and total diabetic check.

PROJECT

To assess factors affecting average length of stay, patient flow management in Out Patient Department and bed management.

RATIONALE, RESEARCH QUESTION & SPECIFIC OBJECTIVES

RATIONALE- The proposed project is important because any organization like a hospital needs hassle free management of its day to day operations. Average length of stay of patients, Patient flow management and Bed Management are the important day to day operational activities of the hospital. Therefore, it is important to achieve hassle free management of the mentioned operational activities in the hospital.

RESEARCH QUESTION- Are the factors affecting average length of stay, patient flow management in OPD and bed management in obstructing operational activities of the hospital?

SPECIFIC OBJECTIVES

- To study the factors contributing towards prolonged stay of patients.
- To provide suitable recommendations to reduce the subsequent length of stay of patients.
- To study factors affecting patient flow in OPD.
- To provide suitable recommendations for hassle free patient flow management.

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REVIEW OF LITERATURE

The main cause of prolonged stay of patients is patient's health status. According to research there is an association between characteristics of hospital and health outcome measures. It also determines hospital charges. Cosper et al. (2006) carried a research on the relationship between hospital characteristics, length of stay and hospital charges. It was done for old patients who have higher risks of diseases like osteoporosis, cardiovascular diseases, diabetes and dementia

Two hospitals named Nkawie Government Hospital and Aniwaa Medical Centre were compared for patient waiting time. According to the research carried out by Ghana (Lievens et. al., 2011) both the hospital have longer waiting times. The OPD cases for Nkwawie hospital was 5040 and Aniwaa Medical Centre was 8991 for the year 2011 which means that Aniwaa Medical Centre had higher no. of OPD cases. But the severity of waiting time is more at Nkawie due to incompetent staff, poor services and poor supervision of government.

First Come First Service (FCFS) was an organization which schedules the time slot to patients within a fixed time window. In case of unexpected patients adaptive urgent rescheduling is done. This is done to adjust the capacity between patient groups. They have also formulated policies for dynamic multi-objective optimization. To solve centralized optimization issue operational research technique was implemented. A study on allocation of resources and policies was carried out by Anke et, al,.

INTRODUCTION & DATA COLLECTION

AVERAGE LENGTH OF STAY

The average length of stay in hospitals (ALOS) is often used as an indicator of efficiency. ALOS refers to the average number of days that patients spend in hospital. It is generally measured by dividing the total number of days stayed by all inpatients during a year by the number of admissions or discharges.

ALOS is a statistical calculation often used for health planning purposes. There is current belief that the type of reimbursement system or health insurance plan now plays a more significant role in the patient length of stay in hospitals.

$$\text{ALOS} = \frac{\text{Total no. of Discharged In-patient days}}{\text{Total no. of Discharged In-patients}}$$

MODE OF DATA COLLECTION

STUDY TYPE- Cross-sectional study.

STUDY AREA- Wards (Semiprivate, private, deluxe, super deluxe and suite, pediatrics, Semi C ward, Semi D), Nursing station.

STUDY PARTICIPANTS-Floor in charge, nursing staff and in-patients.

SAMPLE SIZE-3625 (No. of In-Patients from 3rd April to 5th May.)

TIME- Shift of 09:00AM to 05:30PM

DATA COLLECTION METHODS- TECHNIQUE: Survey (Done with nursing staff and attendants of patients).

DATA ANALYSIS– Done with the aid of MS-excel sheets. The data was entered in sheets department wise and then analyzed with the help of graphs.

ETHICAL CONSIDERATION- Purpose of the study was clearly explained. The respondents were assured of the data confidentiality.

DATA ANALYSIS, COMPILATION AND INTERPRETATION

Data analysis is done with the aid of MS-Excel sheets after collecting data of cash and credit discharge patients from all the Wards (General, semiprivate, private, deluxe, super-deluxe and suite),), ICU (Medical ICU, Surgical ICU, Neurosurgical ICU, Nephro ICU, CT Post ICU, and CT SDICU), OT, Cath Lab, PAC, and Nursing Station.

ALOS= Total No of Discharged IP Days/ Total No Discharged of IP Cases

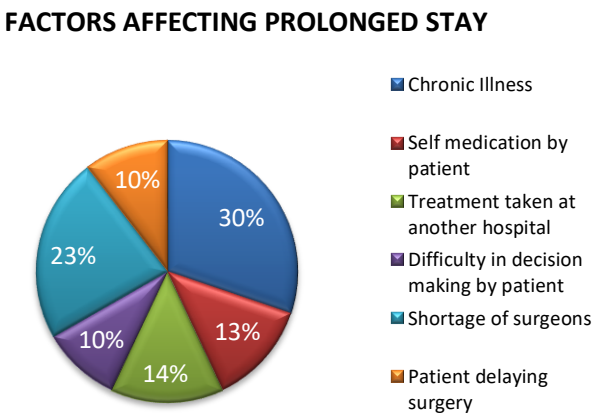
Total no of IP days for all patients for the month of April is 3625

Total no. of IP cases is 615

Hence, by applying formula we get **ALOS 5.89**.

FACTORS AFFECTING AVERAGE LENGTH OF STAY OF PATIENTS

- **Chronic Illness of patient.**
- **Patient delaying surgery.**
- **Patient unable to move.**
- **Self-medication by patient before approaching Apollo Hospitals, Bilaspur**.
- **Decision making difficulty by the patient**.
- **Shortage of surgeons**.



- It was found that total no. of discharged cash in- patients are 261.
- Total no. discharged cash in-patient days are 956.

$$\text{ALOS} = \frac{\text{Total no. of Discharged cash In-patient days}}{\text{Total no. of Discharged cash In-patients}}$$

- So, by calculating ALOS by the formula we get.

ALOS=3.66 (Cash Patients)

- It was found that total no. of discharged credit in- patients are 312.
- Total no. discharged credit in-patient days are 2443.

$$\text{ALOS} = \frac{\text{Total no. of Discharged credit In-patient days}}{\text{Total no. of Discharged credit In-patients}}$$

- So, by calculating ALOS by the formula we get.

ALOS=7.83 (Credit Patients)

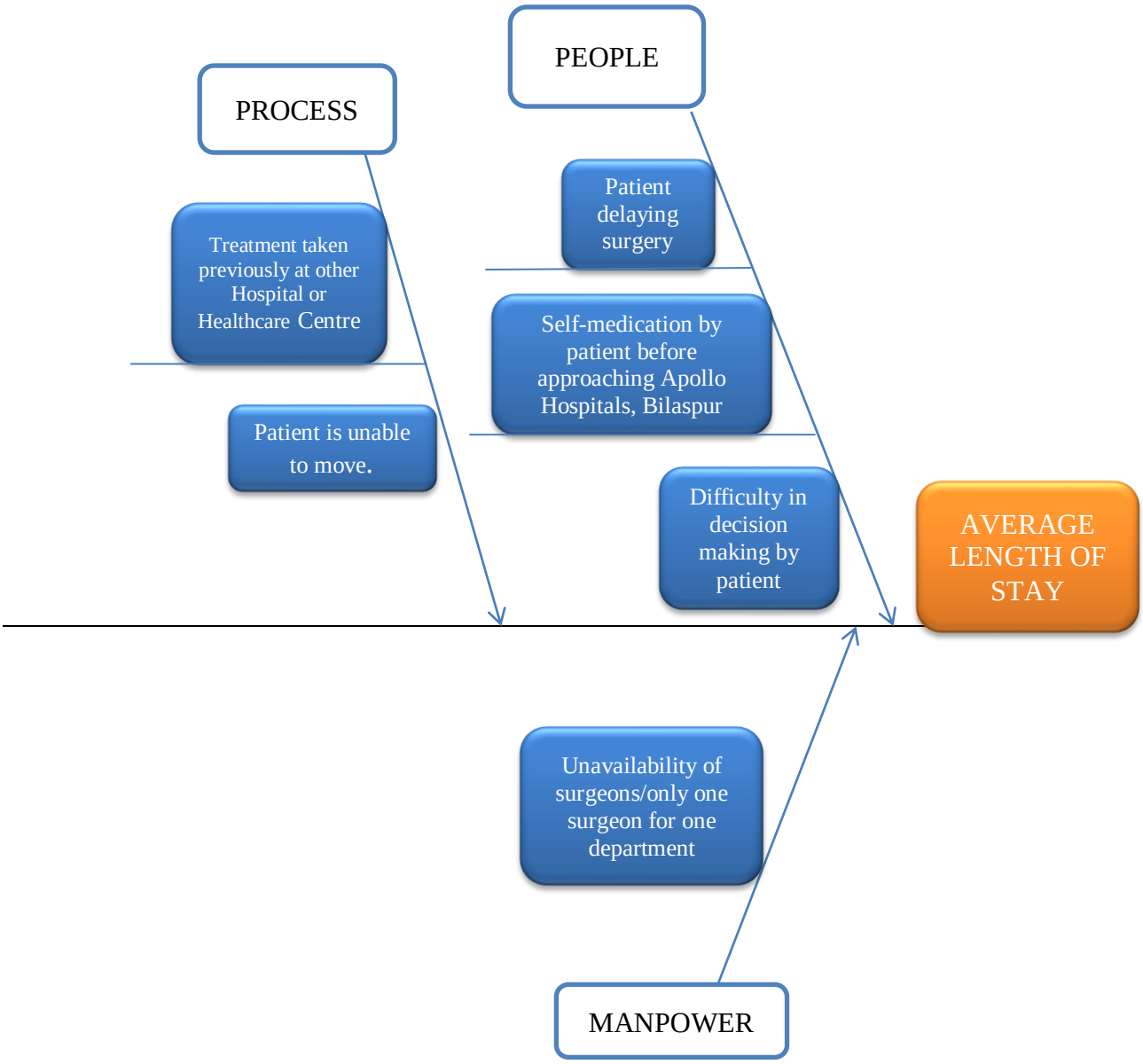
T-test for two sample means- We performed t-test for cash and credit patients with the aid of MS-Excel sheets.

T-Test: Paired Two Samples for Means.

	Variable 1	*Variable 2*
Mean	8.750958	3.662835
Variance	78.38005	6.639729
Observations	261	313
Pearson Correlation	0.450673	
Hypothesized Mean Difference	0	
df	260	
t Stat	10.23861	
P(T<=t) one-tail	3.43E-21	
t Critical one-tail	2.340775	
P(T<=t) two-tail	6.85E-21	
t Critical two-tail	2.59487	

- According to null hypothesis, calculated value must be equal to tabulated value.
- By the above calculation we come to a conclusion that calculated value is higher than the actual value so null hypothesis is not accepted.

FISH BONE ANALYSIS



CONCLUSION & RECOMMENDATIONS-

- After analysis of the data and evaluation of cause of prolonged length of stay of patients in the hospital we come to a conclusion that the major cause is Chronic Illness. For such cases, complete evaluation should be done that regarding history of diseases of patient. Whether the patient has taken earlier treatment or not.
- For the patients delaying surgery and for those who have difficulty in decision-making, counseling is recommended.
- Ensure availability of more than one surgeon in every department.

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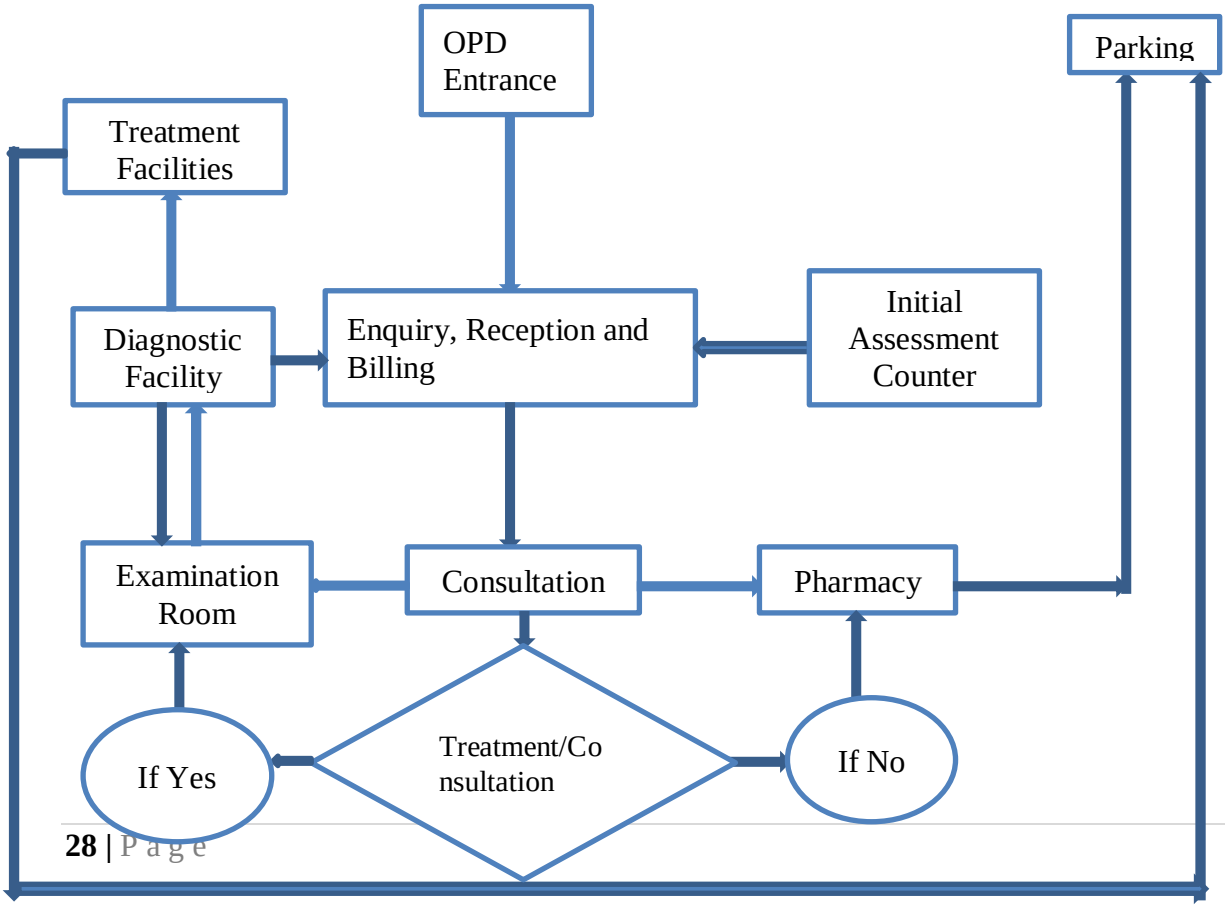
PATIENT FLOW MANAGEMENT IN OPD

OUT PATIENT DEPARTMENT- An outpatient department or outpatient clinic is the part of a hospital designed for the treatment of outpatients, people with health problems who visit the hospital for diagnosis or treatment, but do not at this time require a bed or to be admitted for overnight care. Modern outpatient departments offer a wide range of treatment services, diagnostic tests and minor surgical procedures.

FUNCTIONS OF OPD-

- Early Diagnosis
- Ambulatory and Domiciliary Treatment
- Referral for Admission
- Follow up Care
- Health Promotion
- Training of Staff and Students
- Preventive activities

LAYOUT OF OPD



INTRODUCTION AND DATA COLLECTION

PATIENT FLOW

The term 'flow' defines movement of people, equipment and information through a series of processes progressively. In healthcare, the term generally denotes the flow of patients between staff, departments and organizations along a pathway of care.
It represents ability of healthcare system to serve patients quickly and efficiently as they move through stages of care.

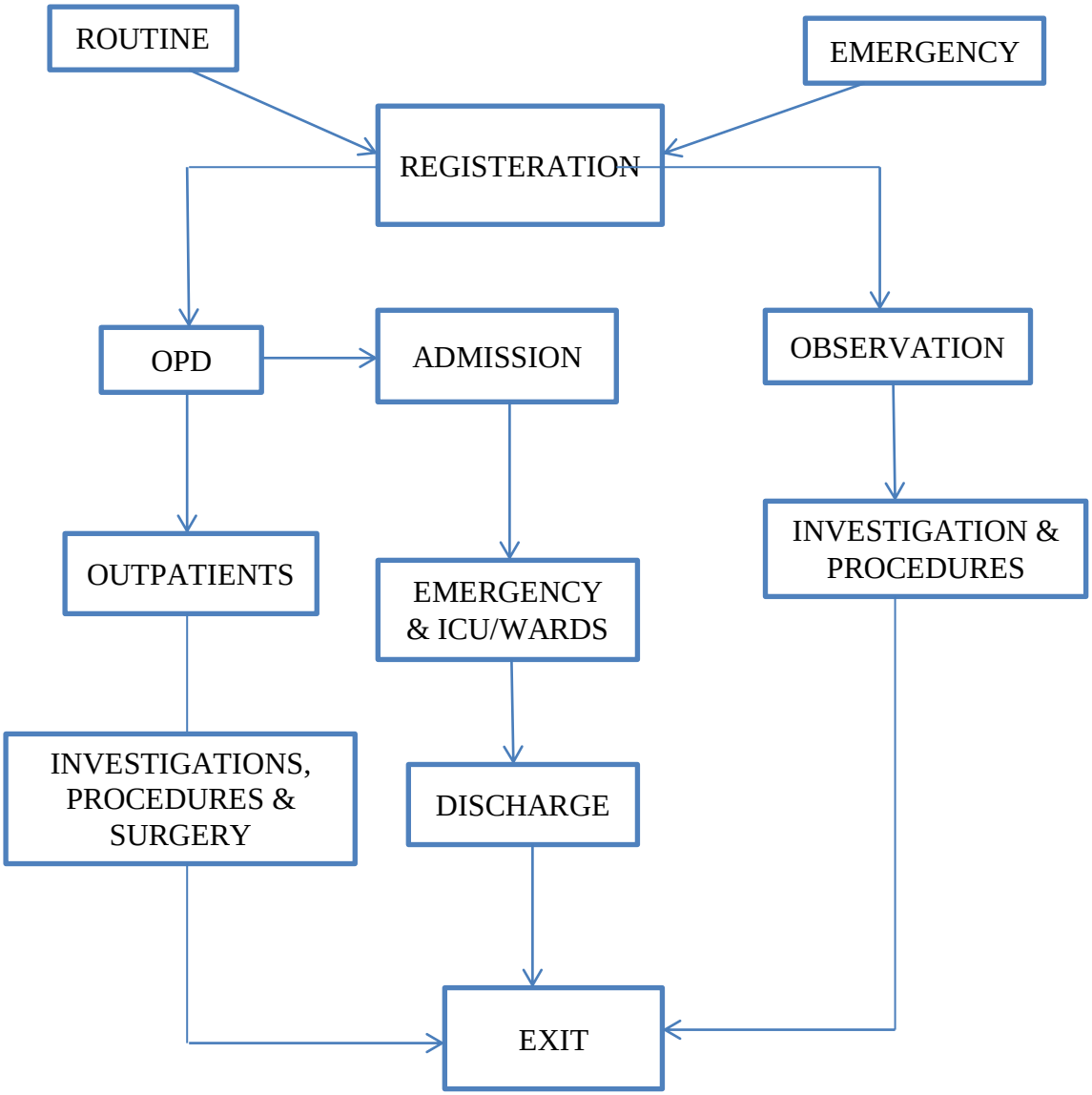
There is clinical and operational view on patient flow management. For a clinician patient's health is the primary focus. Operational view includes movement of patient along pathway of care. It is important to have a close relationship between operational and clinical view for efficient and effective functioning.

Reducing patient waiting time and delays will ensure quality of service provided to the patient at the right time thereby increasing the quality of care provided. This will in turn improve the patient outcome and reduce cost of care.

.TYPES OF PATIENTS IN OPD

- On the basis of Billing
    1. Cash
    2. Credit
    3. New
- On the basis of Treatment
    1. New patient- who is seeking consultation/treatment for the first time.
    2. Follow-up patient- patients who have been treated within seven days.
    3. Old patient- patients who have been treated seven days before.
- On the basis of Appointment
    1. by appointment
    2. Walk-in patients
    3. Emergency.

STANDARD OPERATING PROCEDURE OF PATIENT IN OPD & EMERGENCY



MODE OF DATA COLLECTION

STUDY TYPE-Cross-sectional study.

STUDY AREA-Out-patient Department.

STUDY PARTICIPANTS-Consultants, Staff in reception and billing, nursing staff and out-patients.

SAMPLE SIZE- 6153(All cases from 3rd April to 30th April)

TIME- Shift of 09:00 AM to 05:30 PM

EXCLUSION CRITERION- Patients coming after OPD hour's i.e. 09:00AM to 05:30PM

DATA COLLECTION METHODS--

TECHNIQUE: Interview Scheduled Guides (Done with staff and patients.)

DATA ANALYSIS– Done with the aid of MS-excel sheets. The data was entered in sheets department wise and then analyzed with the help of graphs.

ETHICAL CONSIDERATION- Purpose of the study was clearly explained. The respondents were assured of the data confidentiality.

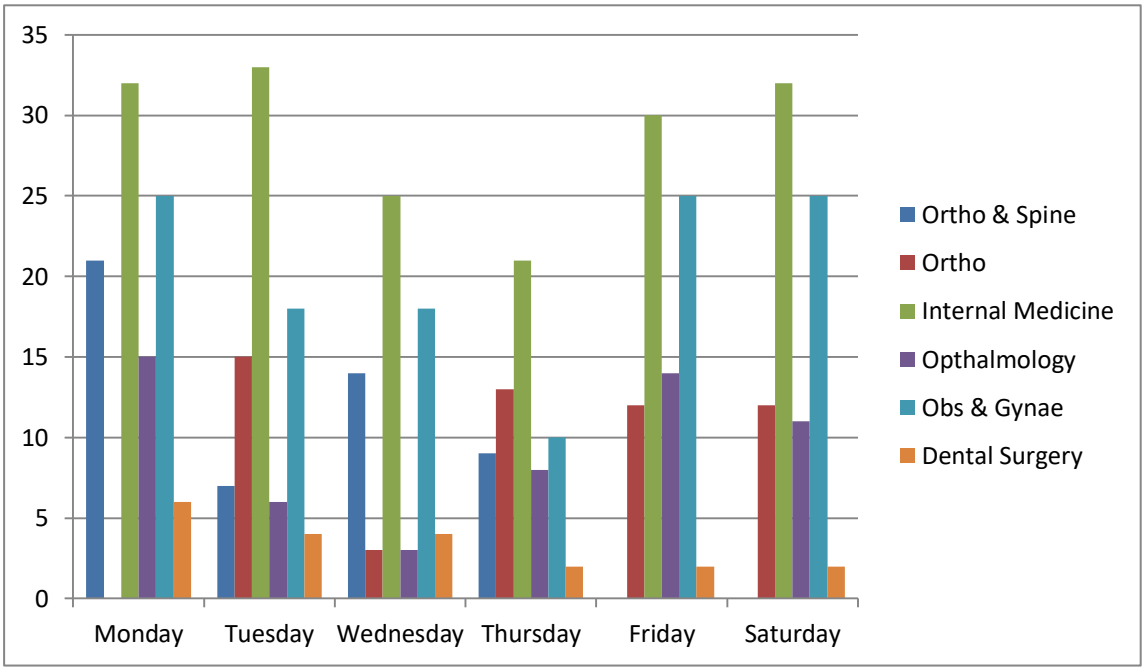
DATA COMPILATION, ANALYSIS AND INTERPRETATION-

Data analysis is done with the aid of MS-Excel sheets after collecting data of OPD patients in the month of April.

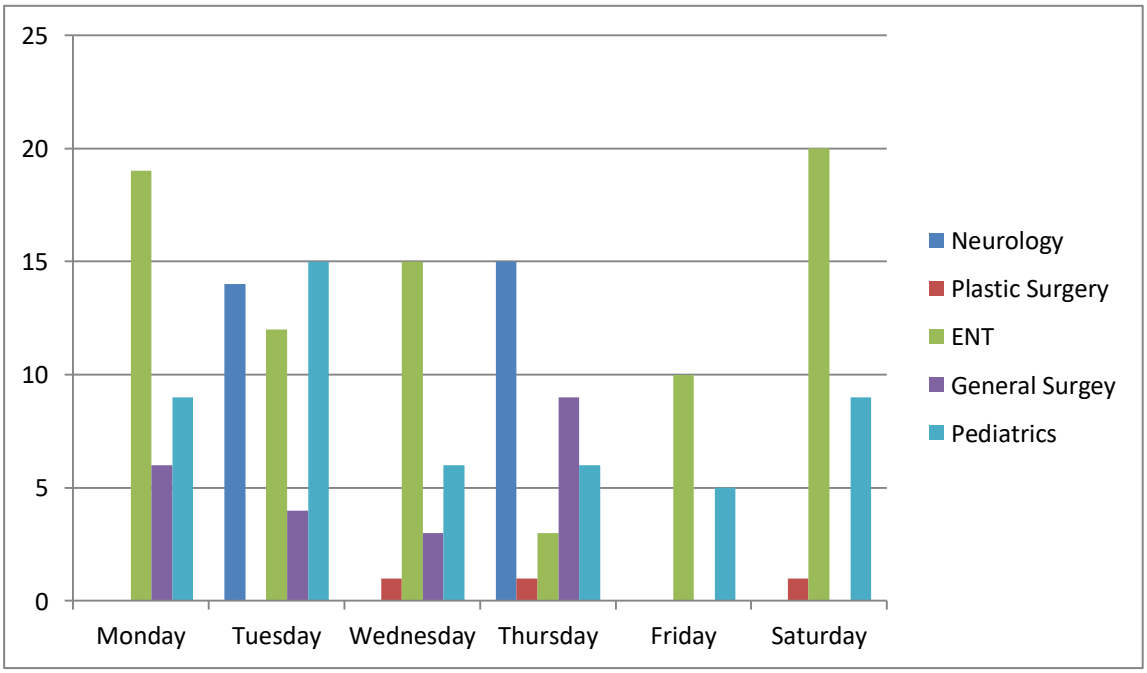
DAY WISE LIST OF PATIENTS IN OPD

As per the graphs below patient flow is higher on Monday, Tuesday and it further increases towards the end of the week i.e. on Saturday. This pattern of the graph shows the increased patient flow on Monday as many patients who visited on Saturday get recalled as per availability of consultants. As many organizations are either closed or have a half day concept of working on Saturday there is increased patient flow. Availability of consultants also adds up to the flow of patients on Saturday.

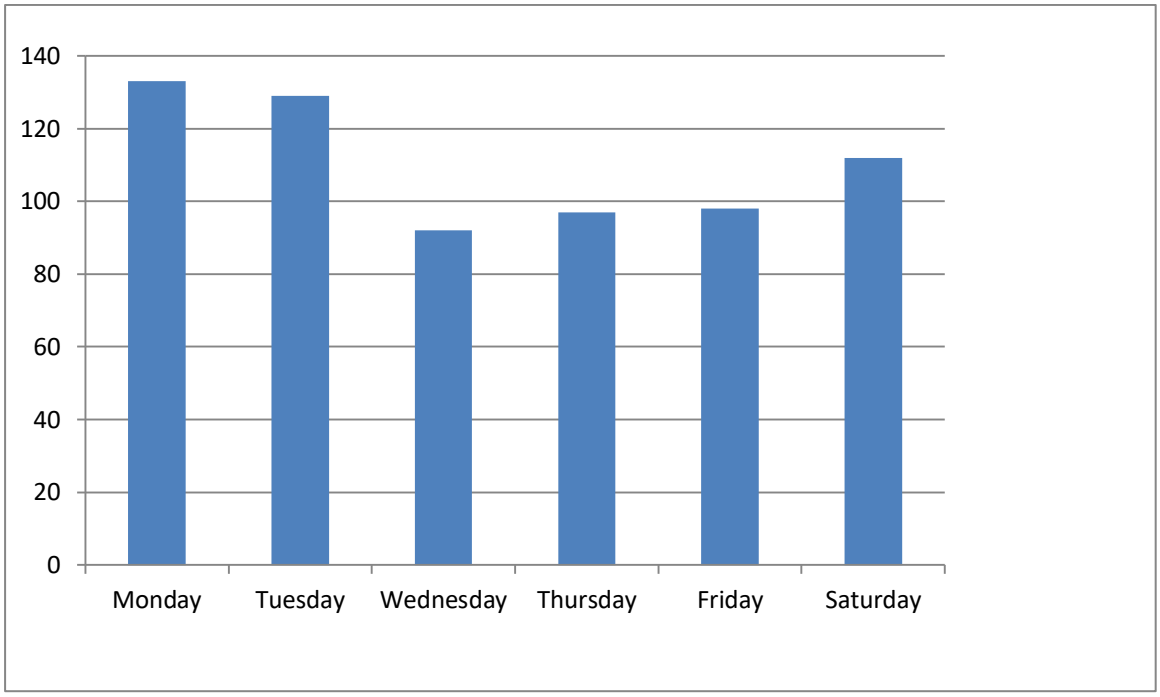
OPD 1


35
30
25
20
15
10
5
0
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Ortho & Spine
Ortho
Internal Medicine
Opthalmology
Obs & Gynae
Dental Surgery

OPD 2


25
20
15
10
5
0
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Neurology
Plastic Surgery
ENT
General Surgey
Pediatrics

DAY WISE LIST OF PATIENTS OF ALL DEPARTMENTS

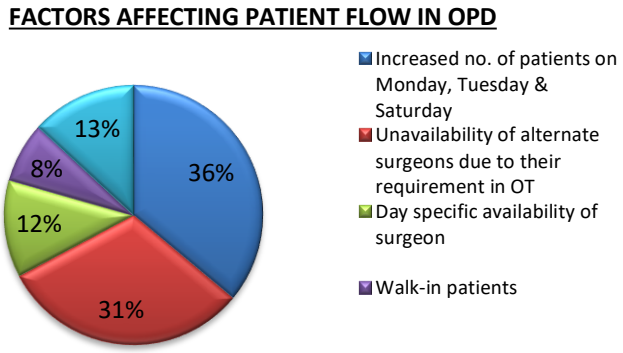


FACTORS AFFECTING PATIENT FLOW

- **VOLUME OF PATIENT'S ON DAILY BASIS**
- **PATIENT WAITING TIME**

- **VOLUME OF PATIENT'S ON DAILY BASIS-** There is relatively higher number of patients in some departments like Gynecology, Neurology, Internal Medicine and Gastroenterology.

- **PATIENT WAITING TIME-** There is delayed patient waiting time because of various reasons-
  - Sometimes, a surgeon may be needed for surgery in the Operation Theatre whereas he/she may be needed in OPD also.
  - Some consultants are also working at Apollo City Centre, which OPD extension of the hospital in the city.
  - In case of walk-in patients who are not aware of the timing of the consultants may have to wait as every consultant has their assigned time schedule.



BOTTLENECKS

A bottleneck is any part of the system where congestion in the system occurs. The flow of patients is obstructed causing delay in treatment and increased patient waiting time. It hinders the natural flow and interrupts movement along the pathway of care causing further obstruction in smooth functioning of the hospital.

DIFFERENT TYPES OF BOTTLENECKS-

There are two types of bottlenecks:

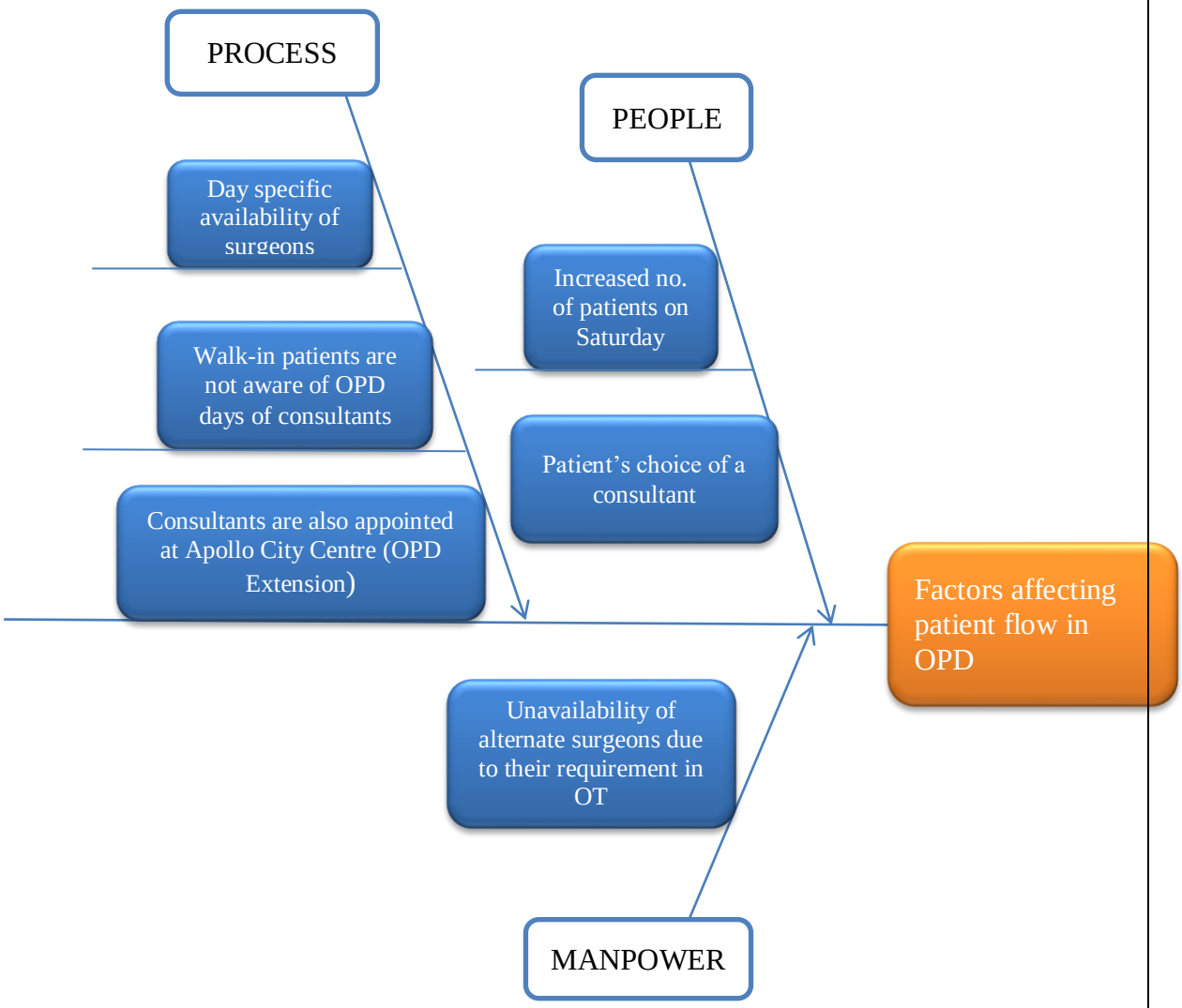
1. **Process bottlenecks**- Process Bottleneck that takes the longest time to complete. It is often referred to as the 'rate limiting step or task' in a process.

2. **Functional bottlenecks**- They are caused by services that have to cope with demand from several sources. In healthcare system radiology, pathology, radiotherapy, and physiotherapy are often functional bottlenecks. It causes waits and delays for patients because of the following reasons:

A surgeon may be called to the operation theatre when he is also needed in outpatients department.

- Unavailability of consultants in OPD as they are also working in Apollo City Centre, which is OPD extension of the hospital in the city.
- Delayed OPD timing because of unavailability of consultants at a particular time.

FISH BONE ANALYSIS



CONCLUSION AND RECOMMENDATIONS

- Ensure availability of alternate surgeons for post-surgical consultation as surgeons may be required in the Operation Theatre as well during OPD hours.
- Ensure availability of surgeons during OPD hours so as to reduce delay in patient waiting time.

REFERENCES

www.emeraldinsight.com/doi/pdf/10.1108/02689239910292945

http://www.enggjournals.com/ijcse/doc/IJCSE12-04-03-120.pdf

www.apollohospitals.com

www1.cms.hhs.gov

ANNEXURE

	Name of the Department	**Date of Visit**	**% of Time Spent**	**Interacted with (Name and Designation)**
1.	Front Office	03-04-2017 to 08-04-2017	12%	In charge(Mr Divik Singh) Secretary(Sandhya, Kavita &Sunny)
2.	Outpatient Department	09-04-2017 to 22-04-2017	12%	In Charge(Abhishek Nandan) Billing Staff (Seema, Kishan and Sudhanshu)
3.	Second Floor (High Dependency Unit)	24-04-2017 to 29-04-2017	12%	In Charge(Aakriti Pandey) Junior Executive (Nilotpal Sahu) Secretary (Simran, Debleena and Gayatri)
4.	Credit Cell & TPA Desk	01-05-2017 to 02-04-2017	4%	In Charge(Neetu Singh) Secretary (Deepak and Rohit)
5.	Accident & Emergency	03-05-2017 to 04-05-2017	4%	In Charge(Dilip Singh Rana) Night Reliever (Aashish)
6.	Typing Pool & Health Checkup Desk	05-05-2017-06-05-2017	4%	In Charge(P Muralidhar Rao) CRA- Geeta

7.	Observation of Departments involved in the project.	08-05-2017 to 13-05-2017	12%	Staff of the departments involved and patients
8.	Preparation of Questionnaire for respective projects and interview of the staff of the departments involved	15-05-2017 to 27-04-2017	23%	Staff of the departments involved and patients
9.	Data analysis and interpretation and preparation of report.	29-04-2017 to 02-04-2017	12%	Mentor

INTERVIEW SCHEDULED GUIDES

It is done with the help of interview from the staff, doctors and patients. The following sets of questions are prepared and interview is taken.

1.	Do you calculate average length of stay of patients?	▪ Yes ▪ No
2.	Does the staff know how to calculate average length of stay?	▪ Yes ▪ No
3.	Do you keep annual records of average length of stay of patients?	▪ Yes ▪ No
4.	How is ALOS calculated?	▪ Manually ▪ Digitally
5.	Do you evaluate the cause of prolonged stay of patients?	▪ Yes ▪ No
6.	How is the appointment done?	▪ Via Telephone ▪ Via Internet ▪ On spot Appointment
7.	How much time is taken to generate receipt of consultation?	▪ Less than 10 minutes. ▪ 10 minutes ▪ More than 10 minutes.
8.	Do you calculate patient's waiting time?	▪ Yes ▪ No

9.	What are the causes of delay in patient waiting time?	▪ Unavailability of consultants ▪ Requirement of surgeon in OT. ▪ Patient overflow.
10.	Do you intimate patients about unavailability of consultants on the date of appointment?	▪ Yes ▪ No
11.	Do you suggest alternate consultant in case of unavailability of opted consultants to patients?	▪ Yes ▪ No
12.	In what format do you keep records of patients?	▪ Manual ▪ Digital ▪ Both
13.	Was the method of appointment convenient to you?	▪ Yes ▪ No
14.	How long did you wait for registration?	▪ 10 minutes ▪ More than 10 minutes ▪ 30 minutes ▪ More than 30 minutes ▪ 60 minutes+
15.	How long did you wait for consultation?	▪ 10 minutes ▪ More than 10 minutes ▪ 30 minutes ▪ More than 30 minutes ▪ 60 minutes
16.	How will you rate staff's ability to explain the procedure of consultation?	▪ Very Poor ▪ Poor ▪ Fair ▪ Good ▪ Very Good