

**TO STUDY THE FACTORS AFFECTING AVERAGE LENGTH OF
STAY (ALOS) OF PATIENTS WITH A VIEW TO SUGGEST
MEASURES TO REDUCE THE ALOS TO IMPROVE CUSTOMER
SATISFACTION AND REVENUE GENERATION IN A TERTIARY
CARE HOSPITAL.**

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1. Introduction

Hospital length of stay is considered to be a reliable and valid proxy for measuring the consumption of hospital resources. Average length of stay, however, albeit easy to quantify and calculate, does not suitably reflect the nature of such underlying distributions and may therefore mask the effects that the different streams of patients have on the system.

Basically, hospital length of stay for an individual patient considered as the total number of patient days for an inpatient episode. The duration of an inpatient's hospitalization is considered to be one day if he is admitted and discharged on the same day and also if he is admitted on one day and discharged the next day. Total length of stay (total discharge days) is the number of days of care rendered to a group of inpatients for admission to discharge. The sum of the length of stay of any group of inpatients discharged during a specified period of time. Physicians exert ultimate control over the way in which treatment procedure are used and the subsequent length of stay of patients. Diagnosis and treatment procedures for the same cause of admission vary among physicians of the same department.

This project uses routinely collected data from wards of MAX Hospital on patients who admitted in hospital for treatment in Gen surgery, internal medicine, gastroenterology, orthopaedics and pulmonology, who were discharged from MAX hospital over period from 1st April 2022 to 31st May 2022. This will be the basis for a running example illustrating the alternative methods of analysis and models of patient's length of stay. Any hospitals length of stay mainly depends on following determinants-

- A. Case mix
- B. Diagnosis related group
- C. Disease staging
- D. Pre procedure LOS
- E. Post procedure LOS

As MAX hospital is a super specialty hospital so above three determinants like case mix, diagnosis related group and disease staging affect average length of stay of the hospital. In this study for a more nuanced assessment of efficiency, we break LOS down into its two key components: the time from patient's admission to the hospital until their procedure and the time from their procedure until their discharge. Hence, pre procedure LOS serves as a proxy for hospital's lean efficiency.

1.1 ALOS and Business impact:

Hospital length of stay is inversely proportional with profit making because if the length of stay is high then obviously bed turnover rate would be low which lead to low profit making. In context of MAX Hospital, it seems very realistic because as it is a super specialty hospital so the case mix is very high and in all the speciality. Hence this hospital has a different protocol and package system for different speciality. If against the protocol a single patient's stay is exceeding then this will become liability for the hospital because in that mean time hospital would like to perform yet another procedure to maximize the utilization of its resources.

Apart from bed turnover rate it also results as high bed occupancy and low patient satisfaction because high length of stay translates into a reduction in effective bed capacity and admission process admissions. Bed occupancy is not the index for the efficiency of the hospital but has a significant and quantifiable negative influence on the Emergency department, affecting patients both hospitalized and the patients who are waiting for admission.

1.2 DEFINITION AND TERMS USED:

(A) Bed occupancy:

The ratio of inpatient service days to bed count days in the period under consideration. The inpatient census represents the actual occupancy (number of occurrences). The bed count represents the possibility for occupancy (number of times it could have occurred or the maximum possible. It has found that patients with shorter stays are more satisfied with their experience than those with longer hospital visits. The study identifies four area that contribute to patient satisfaction with the discharge process:

Patient readiness to leave the hospital, an efficient, swift patient discharge process, clear instruction for care after discharge, coordination of arrangements following discharge so that the patient has all the support and equipment necessary.

(B) Bed turnover rate:

The number of times a bed, on average, changes occupants during a given period of time, the average number of admissions per bed per time period useful because two

time periods may have the same percentage of occupancy, but the turnover rates may be different. While conducting the study we need to be familiar with the following terminology which are commonly used in the hospitals and are required for understanding the process.

(C) Key personnel:

Senior doctors, Junior Doctors, Nurses, Discharge secretary, General duty Assistant, Billing Department, Insurance Company, Patients.

1. Objectives of internship

- To find out the factors affecting for high average length of stay.
- To suggest measures to reduce high average length of stay thereby improving revenue generation and patient satisfaction

2. Organizational Profile



Figure 1 and 2: MAX Hospital, Patparganj

Max Super Speciality Hospital, Patparganj is 400+ bed Healthcare facility and a unit of Balaji Medical. Diagnostic Research Centre, providing services in medical disciplines of Cardiac Sciences, Oncology, Neurosciences, Obstetrics and Gynaecology, Orthopaedics, Urology and Kidney Transplants, Minimal Access, Metabolic, and Bariatric Surgery, among others. Equipped with 116 ICU beds and 14 HDU beds, Max Super Speciality Hospital Patparganj brings together patient-centric care and the latest innovations in medical technology.

With over 510 medical experts and leading doctors, and a nursing staff of over 770 nurses, each and every individual of the Max Patparganj family is committed towards providing the highest standard of medical care in the world. Armed with state-of-the-art technology, 11 high-end modular Operation Theatres, and a commitment to provide patient-centric care, we

make sure that every patient who walks through the doors of Max Healthcare gets a holistic healing environment that they deserve. With our NABL accredited Max Lab and NABH accreditation, we aim to deliver the highest standard of healthcare.

With over 28 clinical specialities, Max Super Speciality Hospital, Patparganj offers the advantage of integrated medical care in a multidisciplinary setting provided by a faculty of highly qualified doctors, nurses, & healthcare professionals. Comprehensive specialist services are provided with advanced medical technology, making it a regional hub for complex procedures such as neurovascular interventional procedures, targeted cancer treatments, heart surgeries, orthopaedic surgeries, and Fertility treatments. Max Super Speciality Hospital, Patparganj is an established leader among healthcare providers with multiple awards and industry accreditations to its name for world-class infrastructure, advanced technology, and health and safety standards.

Hospital Values:

- **COMPASSION**-The hospital has a deeper level of patient understanding and are always empathetic to their needs. This encourages a culture of providing a higher standard of patient-centred care. The hospital staff respect each other and the patients, and ensure that their needs are met with dignity. The hospital rises to the occasion each time for it recognise the positive social impact it can create.
- **EXCELLENCE**-The hospital asks more of themselves and are always passionate about achieving the highest standards of medical expertise and patient care. They understand that being the best is a continuous journey of becoming better versions of ourselves every day.
- **EFFICIENCY**-It creates a responsive healing environment, by being nimble to the needs of their patients and delivering what they really need with precision and timing. They are focused yet fast, personal yet practical, advanced yet seamless in delivering the exact care our patients need

- **CONSISTENCY**-It always deliver on their commitment and ensure the highest level of patient care is met at every stage, every time. The hospital believes that only through consistency can it achieve its patients' trust and fulfil their goals

Accreditations: MSSHP:

- NABH accredited hospital in Patparganj, Delhi by Quality Council of India for maintaining high standards in Clinical Care and Support Services.
- 1st NABH accreditation received on 2011, confirming our commitment to maintaining high standards in Clinical Care and Support Services.
- NABL accredited, confirming our commitment to continuous quality improvement.



3. Services provided by MAX Hospital, Patparganj

Centres of Excellence

- Bariatric Surgery/ Metabolic
- Bone Marrow Transplant
- Cancer Care/ Oncology
- Cardiac Sciences
- Endocrinology and Diabetes
- Gastroenterology, Hepatology and Endoscopy
- Kidney Transplant
- Laparoscopic/ Minimal Access Surgery
- Liver Transplant and Biliary Sciences
- Neurosciences
- Orthopaedics and Joint Replacement
- Surgical Gastroenterology
- Urology

Other Specialities

- Aesthetic and Reconstructive Surgery
- Audiology
- Audiology And Speech Therapy
- Cardiac Arrhythmia
- Dental Care
- Dermatology
- Ear Nose Throat
- Electrophysiology-Pacemaker
- Emergency and Trauma
- Eye Care
- Gastro Intestinal and Hepatopancreatobiliary Surgical Oncology
- Health and Wellness
- Infertility and IVF
- Internal Medicine
- Interventional Cardiology
- Interventional Radiology
- Lung transplant
- Mental Health and Behavioural Sciences
- Nephrology
- Nutrition and Dietetics
- Obstetrics and Gynaecology
- Paediatric
- Pain Management
- Physiotherapy and Rehabilitation Medicine
- Podiatry
- Pulmonology
- Radiology
- Speech Therapy
- Thoracic Surgery

Other services

- **COVID-19 Vaccination for children in Delhi-NCR**

Child will be vaccinated with Bharat Biotech's Covaxin. It is approved by the Government of India for administration to children over 15 years.

At secure green zone, paediatric experts will take utmost care and precautionary measures to ensure maximum safety for child within the hospital premises.

- **MAX Lab**
- **MAX @ Home**

Max Healthcare, a leading name in the healthcare industry, brings its medical expertise and hospital-quality healthcare in the comfort of your home through Max@Home. With a special

purpose to help people lead a life with independence and dignity, we deliver our services with compassion, excellence and reliability.

To help you help you recover faster and lead a comfortable life, we provide nursing care attendants, physiotherapists and doctors for home visits. We also arrange for home sample collection and facilitate medical equipment on rent.

- **Preventive Health Checks**

The focus of the PHC Programme is on administering a truly standardized and medically correct set of tests. Unlike others, we do not include or exclude tests just to make our Programme available at pre-decided prices.

Medically incomplete Preventive Check-Ups can give you a false sense of security, as they do not include certain tests, which might be of vital importance to you. The Max Preventive Health Programme is designed keeping in mind the disease risk profile, which essentially varies with age and gender. On the strength of medical evidence, we have packages that are just right for you.

- **Emergency Services**

24x7 Specialists.

Life Support Ambulance.

Fast Response Time

- AIR AMBULANCE (+91 11 4055 4055)

Air ambulance services from IERS ensure you the safest & most secure shifting to our hospital or medical centres located across India. Our world class air emergency medical services will let you reach any of our network hospitals within the least possible time.

Service Includes

- Transporting patients on special aircraft - AIR AMBULANCE / Commercial Airlines / choppers.
- Special trained team of doctor/ nurse accompanying the patient from "bedside to bedside" throughout the transfer.

- Ticketing and ground transport for the patient.
- Special assistance at the airport for speedy and comfortable boarding.
- Arrangement of portable lifesaving equipment like defibrillators, ventilators, infusion pumps, spine board, balloon pumps, pacemakers, monitors, oxygen cylinders, stretchers and other special requirements in the aircraft.

4. Key activities

- ALOS

To maintain ALOS in excel day wise of seven specialities like general surgery, internal medicine, gastroenterology, orthopaedics, pulmonology, nephrology and neurology. The sheet is also maintained by category wise. ALOS sheet is basically maintained in two categories Category B (Corporate and CGHS) and Category C (CASH and TPA).

- Medical reconciliation

To maintain excel sheet of medical reconciliation of 1 day stay patients. Here I checked the IP note of these patients whether the medications the patients are consuming are written or not by the doctor. Have the doctor asked for current medications consumed by patients are written or not in IP notes. CPRS software is used to check the IP notes of the patients.

- Dreamsol closure

Max Hospital has an online portal for feedback i.e., Dreamsol. On daily basis feedbacks from text messages, ward and website get uploaded on the dreamsol website. Complaints regarding admission, discharge and Doctors falls under Medical Admin Department, hence we lookout for these three categories only. For the closure I would look for the details filled by the complainant/ Patient and discuss with the AMS for the closure. In some cases, no proper explanation is provided, so for those cases calling was done to take the proper feedback. The complaints were closed after sensitizing the concern department and doctor.

- E-prescription

To maintain excel data about e-prescription of various departments. To check whether doctor has done investigations or not.

5. Key learnings:

Department wise learnings

The learnings about how the organization works and what are the different departments and how departments works and how their functions are inter related and depend on each other, are based on observations as well as by personal interactions. All the learnings are summarized below.

OPD	Reception/ Information system
	Giving appointment
	Registration system-OPD and Diagnosis
	Billing function-OPD, diagnostics, Emergency
	Report/ document delivery system
	Customer feedback system
HR	In development of HR policies and strategies
	In manpower planning
	In recruitment and selection
	In employee training
	In salary determination
	In performance appraisal
	In grievance handling
MRD	Proper storage and maintenance of medical records
	Maintenance of integrity and confidentiality of medical records
	Submission of required data to government
IT	In maintenance of all the software's in the hospital like HIS and CPRS
	IPD billing
	In OPD billing
	In ward/ nursing department etc.
Emergency and trauma	Provide immediate care to patients in need
	Categorize patients according to the TRIAGE
	CODE BLUE team in case of cardiac emergency

Blood bank	Blood donation or collection
	Storing blood
CSSD	Sterilizing all the instruments used in the hospital
	Sterilizing, storing and supplying the clean linen
ICU	For critically ill patients
	Barrier nursing
Quality	For continuous quality improvement
	Driving clinical audits through clinicians
	Quality improvement audits
	Keeping a check on quality indicators.
Marketing and sales	Brand promotion
	Doctor's promotion
	Arranging continuous medical education, camps, meetings, conferences
	Field visits for doctor's referrals
Medical Operations	Regular updating of ICU's status
	Ward rounds
	Medical updated (patient files for the form filling by the doctors and nurses)
	Auditing of discharge summaries of panel patients
	Regular checking the average length of stay (ALOS) of inpatient
	Give closures for feedbacks filled by patients through various modes like text message, ward complaints, website complaint, twitter.