

A TIME MOTION STUDY TO OPTIMIZE THE PATIENT DISCHARGE PROCESS IN OPERATIONS DEPARTMENT

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in

Hospital and Health Management

by

Adarsh Anand

Under the Supervision and Guidance of

Dr. Sanjay Gupta

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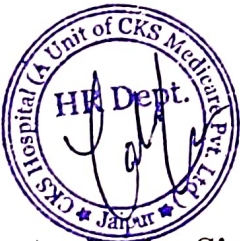
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To Whom It May Concern

This is to certify that Mr. Adarsh Anad S/o Mr. Sanjeev Kumar Singh a student of Masters in Business Administration (Hospital and Health Care Management), IIHMR University, Jaipur, Rajasthan has successfully completed training as Operation Management Trainee from 10th Mar 2025 to 30th May 2025 at CKS Hospitals. During this period of his training programme with us he was found punctual, hardworking and inquisitive.

We wish him every success in life.

For CKS Hospital
(A Unit of CKS Medicare Pvt Lt.)



Authorise Signatory

CERTIFICATE

This is to certify that dissertation titled **A TIME MOTION STUDY TO OPTIMIZE THE PATIENT DISCHARGE PROCESS IN OPERATIONS DEPARTMENT** is the record of the research work undertaken by **Mr. Adarsh Anand** in partial fulfillment of the requirements for the award of the degree of M.B.A. (**Hospital and Health Management**) from the IIHMR University, Jaipur my guidance and supervision and his approach to the research study has been sincere, scientific and analytical.



Dr. Sanjay Gupta

Dean and Professor

IIHMR University, Jaipur

Date: 24/6/2025



Dr. Sanjay Gupta

Dean and Professor

IIHMR University, Jaipur

Date: 24/6/2025

DECLARATION BY THE STUDENT

I hereby declare that this dissertation titled **A TIME MOTION STUDY TO OPTIMIZE THE PATIENT DISCHARGE PROCESS IN OPERATIONS DEPARTMENT** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature) Adarsh

Name of the Student: Adarsh Anand

Date: 24/06/2025

ABSTRACT

Title:

A time motion study to optimize the patient discharge process in operations department

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Abstract:

The patient discharge process represents a critical endpoint in a patient's hospital journey, directly impacting hospital throughput, resource utilization, and overall patient satisfaction. Despite advancements in infrastructure and technology, many healthcare institutions, including CKS Hospital, Jaipur, face persistent inefficiencies and delays during patient discharge. This study was conducted to examine and optimize the discharge process using the Time Motion Study (TMS) method within the hospital's Operations Department.

A descriptive and observational study design was adopted, involving the real-time tracking of 100 inpatient discharge cases across different wards and payment categories (Government schemes, TPA, and Self-pay). Data was collected using structured checklists, observation sheets, and staff questionnaires. The process was analysed to identify critical time delays, workflow inefficiencies, and coordination gaps among departments like nursing, billing, pharmacy, and administration.

The findings highlighted that the average discharge time was significantly prolonged due to non-synchronized communication between departments, manual paperwork,

and limited discharge planning. Government scheme patients faced the longest delays due to complex documentation and verification requirements. Bottlenecks were most prominent during discharge summary preparation, pharmacy clearance, and billing.

The study proposes several interventions, including early discharge planning, adoption of digital tools for tracking discharge status, staff training, and cross-department coordination protocols. Implementing these changes could improve patient experience, reduce discharge time, increase bed availability, and support hospital quality benchmarks such as NABH accreditation.

This research offers valuable insights for medium-sized hospitals in India seeking to enhance operational efficiency and patient-centric care through evidence-based process optimization.

Keywords:

Time Motion Study, Patient Discharge, Hospital Operations, Process Optimization, NABH, Discharge Delay, Hospital Workflow, CKS Hospital, Discharge Planning, Healthcare Efficiency

Background:

In hospitals, the discharge process marks the final clinical touchpoint in a patient's care journey. A delayed discharge not only reduces bed availability but also impacts patient satisfaction, increases the risk of hospital-acquired infections, and disrupts hospital workflows. At CKS Hospital, Jaipur—a NABH-accredited multispecialty hospital—prolonged discharge times were observed due to coordination issues and inefficient workflows among the clinical, billing, pharmacy, and nursing teams. This prompted the need for a systematic, data-driven assessment to improve operational efficiency and patient experience.

Objectives:

- To map the existing patient discharge workflow and identify all key steps involved.
- To record and analyse the time taken for each step of the discharge process using Time Motion Study (TMS).
- To identify delays, redundancies, and interdepartmental coordination issues.

- To assess staff roles, behaviour, and communication in the discharge process.
- To recommend improvements for optimizing discharge turnaround time and increasing hospital efficiency.

Methodology:

Study Design: Descriptive and observational using Time Motion Study (TMS).

Setting: Operations Department at CKS Hospital, Jaipur.

Duration: 2 months (10th March – 10th May).

Sample Size: 100 discharged patients across multiple wards (5th and 6th floor – General, Semi, ICU).

Sampling Technique: Purposive sampling including various departments (e.g., Cardiology, Neurology, Urology, etc.).

Data Collection Tools:

- Discharge time checklist and observation sheets.
- Staff assessment questionnaire.
- Direct timing via stopwatch/digital tools.

Data Analysis: Descriptive statistics (mean, median, range), charts, and graphs using Excel.

Key Findings:

Average Discharge Time: Delays ranged between 2 to 6 hours post medical clearance.

Main Bottlenecks:

- Delay in preparation and correction of discharge summaries.
- Pharmacy clearance (especially for scheme/insurance patients).
- Time lag between billing clearance and final patient departure.

Payor Impact:

- Govt. scheme patients had the highest delay due to documentation.
- TPA and Self-pay patients experienced relatively smoother discharge.

Departmental Impact:

- Lack of synchronized communication among doctors, nurses, billing, and pharmacy.
- Variation in staff performance across shifts contributed to inconsistency.

Floor-Wise Impact:

- Semi-private and ICU floors showed higher delay due to complex cases.

Conclusion:

The discharge process at CKS Hospital is affected by structural inefficiencies, departmental silos, and manual processes. The Time Motion Study revealed that nearly 40–60% of total discharge time is consumed in non-value-adding steps that can be automated or streamlined. Implementing real-time discharge tracking systems, training staff on discharge protocols, and early morning discharge planning can significantly reduce wait times and improve patient satisfaction. The study reinforces that optimizing discharge workflow is not only vital for better service delivery but also critical for increasing hospital throughput and aligning with quality accreditation standards like NABH.

ACKNOWLEDGEMENT

Firstly, I would like to thank those who have made this possible with their input.

I take this opportunity to express my deep gratitude to **Dr. P. R. Sodani, President, IIMR University, Jaipur (Rajasthan)**, deserves much appreciation for his support and guidance as he made it easy for me to get the right academic environment necessary for pursuing a career in academics. I would like to express my gratitude to **Dr. Sanjay Gupta, Dean and Professor**, my academic mentor, who has been supporting and motivating me through various stages of the project.

I would like to thank valuable guidance and motivation throughout the entire process of the dissertation writing. His mentorship and thoughts provided the structure for my research.

Additionally, during my time at CKS Hospital, Jaipur, I was supported by conducting my research work.

My family deserves more than thanks for their continuous care, love, and encouragement during all these years of education that kept pushing me each day; they believed in more than I believed in myself.

Lastly, I want to acknowledge the invaluable support of my expert guidance, and constant support throughout this endeavor. His mentorship has been truly invaluable.

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CHAPTER 1

Introduction

Efficient hospital operations play a pivotal role in enhancing patient satisfaction, streamlining service delivery, and maintaining institutional credibility. Among the many processes that define hospital operations, the patient discharge process stands out as a critical touchpoint. It not only marks the completion of a patient's clinical journey but also significantly impacts bed availability, workflow continuity, and overall hospital throughput. Any delay or inefficiency in this process can result in prolonged patient stay, reduced bed turnover, dissatisfaction among patients and their families, and resource underutilization.

In modern healthcare systems, particularly in a busy multispecialty hospital like CKS Hospital, Jaipur, optimizing operational workflows has become essential to meet the growing demand for quality care. With the rise in patient load and complexity of healthcare services, the discharge process, which involves coordination among multiple departments—clinical, billing, pharmacy, nursing, and administration—often becomes a bottleneck. These interdepartmental dependencies create gaps that are not always visible through traditional auditing methods.

To address this, Time Motion Study (TMS) emerges as a valuable tool. TMS involves the systematic observation, recording, and analysis of time taken for each sub-process within a workflow. When applied to the discharge process, it helps identify unnecessary delays, redundant steps, staffing gaps, and potential areas for digitization or automation. This study aims to use time-motion techniques to uncover inefficiencies, thereby proposing a streamlined, patient-friendly discharge protocol at CKS Hospital.

Furthermore, a smooth discharge process is not just an operational necessity—it also directly affects hospital reputation, patient experience scores, and even revenue cycles. In an era of competitive healthcare where patient-centric care is the key to

sustainability, such process-level optimizations are aligned with broader quality improvement frameworks like NABH standards and Lean Healthcare models.

This study therefore not only contributes to the internal performance enhancement of CKS Hospital but also sets a precedent for similar medium-sized healthcare institutions across India to adopt evidence-based operational reforms. Through detailed observation, quantitative time tracking, and workflow mapping, this research will develop actionable recommendations to ensure that the patient discharge process is timely, coordinated, and efficient.



Background:

CKS Hospital is a NABH Accredited, multi -super speciality hospital in Jaipur situated at Sikar Road. We deliver all the high-end, round-the-clock healthcare services to the patient. The hospital has 20+ departments that deliver treatment for the disease related to cardiology, neurology, urology, orthopaedics, nephrology and many more. A team of 50+ expert and experienced doctors are always ready to offer advanced treatment to every disease. 200+ beds, advanced technology, expert healthcare staff, and on-time ambulance services makes us the top hospital in Jaipur.

The director of the hospital, Dr. Prakash Chandwani, is the cardiologist in Rajasthan. Cardiologists in CKS Hospital are board-certified in many cardiovascular specialities and have significant credentials in their treatment fields. CKS Hospitals has a team led by the best Cardiologists in India. The team of cardiologists is trained and experts in delivering the best cardiology surgery to patients. They are entirely devoted to the treatment of coronary heart disease. A revolutionary work for the treatment and prevention of cardiac diseases has led to the achievement of better outcomes and improved quality of life for thousands of cardiac patients who visit CKS hospitals each year for complex cardiac surgery.

Treatment & Diagnosis provides by CKS Hospital

1. Cardiology-

CKS Hospital Provides Best Cardiac Surgery in Jaipur. Hospitals have state-of-the-art Cath Labs, operation theatres, and other heart care technologies. Cardiology is the medical department that deals with the conditions and diseases associated with the heart. Experienced cardiologists manage such ailments. At CKS Hospitals, we provide you with the team of the best cardiologist in Jaipur, Rajasthan. However, heart surgeons who specialise in surgical procedures are carried out to correct heart conditions.

Cardiovascular disease (CVD) is a term often used for heart disease. CKS Hospitals is one of the best Cardiac hospitals in Jaipur, India rendering treatment to ailments like heart defects, congenital heart disease, pulmonary heart failure, and coronary artery diseases. It is a one-stop destination for several kinds of cardiac treatments with cutting-edge technology. It serves heart conditions like Invasive and Interventional Cardiology, Electrophysiology, pacemaker and Arrhythmia services, abdominal and descending thoracic aneurysm and varicose veins, ACD, CRT, Heart Hole surgeries (ASD, VSD, PDA), Paediatric Cardiac Surgery, and Angioplasty/Angiography.

Diagnosis

Usually, people with common signs and symptoms of cardiovascular diseases try to carry self-treatment without understanding which part of the heart defects may worsen the situation. Also, a delay in treatment makes recovery a little delayed.

To avoid acute complications, patients with cardiovascular disease are advised to get diagnosed by a cardiologist who will provide adequate medical assistance and suggest suitable treatment. CKS Hospitals is considered the [best heart hospital in Jaipur](#) as we are providing one of the best cardiac surgeries in Jaipur equipped with state-of-the-art diagnostic machines that provide accurate results. Heart specialists conduct a few diagnostic tests to figure out the root cause of cardiovascular diseases:

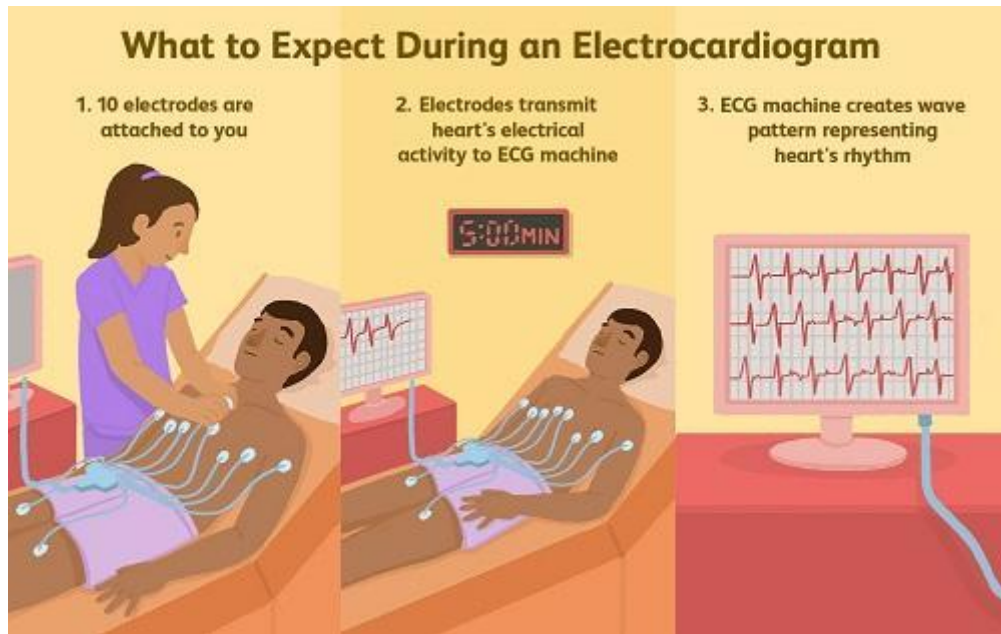
1. Blood Tests

While diagnosing, doctors perform various lab tests wherein they take your blood sample to check the usual signs of heart diseases and their risk factors. Those lab tests and blood samples check cholesterol level, lipid components of blood, and fats.

2. Electrocardiogram (ECG)

One of the most common tests, an EKG/ECG, is carried out to record the heart's electrical activity. An electrocardiogram (zigzag line) indicates the speed and the rhythm of the heart. Although this is a painless test, the patient is strapped to the machine with several patches across the chest, ankles and wrists. Meanwhile, the

doctor records the activities of the heart on a portable machine. Usually, this test is used to determine angina attack, heart attack and arrhythmias.



3. Echocardiogram

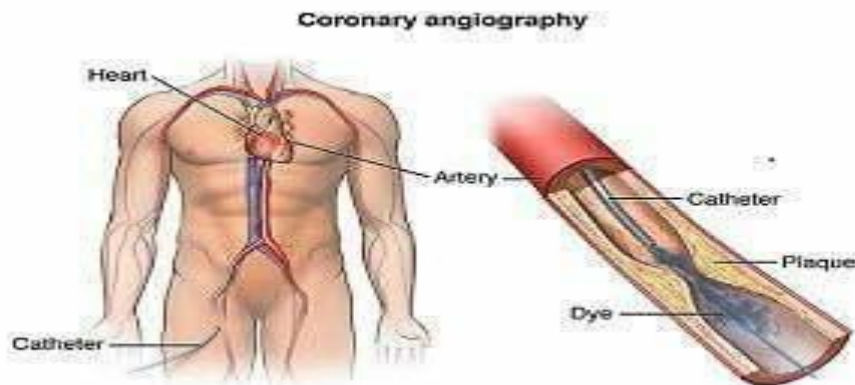
An echocardiogram is also called echocardiography or diagnostic cardiac ultrasound, and this test procedure is used to analyze the working and system of the heart. The test uses sound waves that make the moving picture of the heart appear on the monitor. Sometimes, heart specialist/cardiologists also combine echocardiography with Doppler to look at the heart areas with poor blood supply. This is also used to check which heart muscles are not functioning normally.

4. Stress Test

The stress test is performed to examine how the patient's body behaves to the external stress. The individual is asked to run on a treadmill with the patches of EKG/ECG placed across their body used to evaluate the heart's activity. Patients who cannot exercise are given pills that increase their heart rate.

5. Holter Monitoring

When heart rhythms are not easily detected through ECG test Doctors, perform Holter monitoring to check irregularities in the heart rhythm properly. The portable device is used off camera's size and has wires with silver dotted electrodes stuck on the skin. The patient is asked to wear a Holter monitor to record a continuous ECG. This test lasts for at least 24 to 72 hours.



6. Cardiac Catheterization

Cardiac catheterization, another test to diagnose cardiovascular disease. This includes an invasive procedure within which cardiologists insert a long thin tube, referred to as a catheter, in an artery or vein in the neck, arm or groin. The tube is then threaded through the blood vessel to the heart. A contrast dye is inserted through the catheter to get detailed images of the valves, coronary arteries and heart chambers. The test is carried out to examine the heart's functioning by measuring blood pressure and blood flow.

7. Cardiac Computerized Tomography (CT) Scan

A cardiac CT scan is used to get the heart and chest images to check the issues. During the test, the patients are asked to lie on a table attached to the machine, which comprises an X-ray tube that scans the body and collects images.

8. Cardiac Magnetic Resonance Imaging (MRI)

This test is a kind of advanced CT-Scan performed to get 3D pictures of the heart. This test uses magnets, radio waves and a monitor to create images that help the doctors in evaluating the heart problem

Treatments-

At CKS Hospitals, use cutting-edge technologies and methodologies to be one of India's best cardiac Surgery in Jaipur.

After performing all the necessary tests and the diagnosis, the doctors suggest the best treatment for the patients. Some of the common treatments that are performed for cardiovascular diseases:

1. Lifestyle Changes

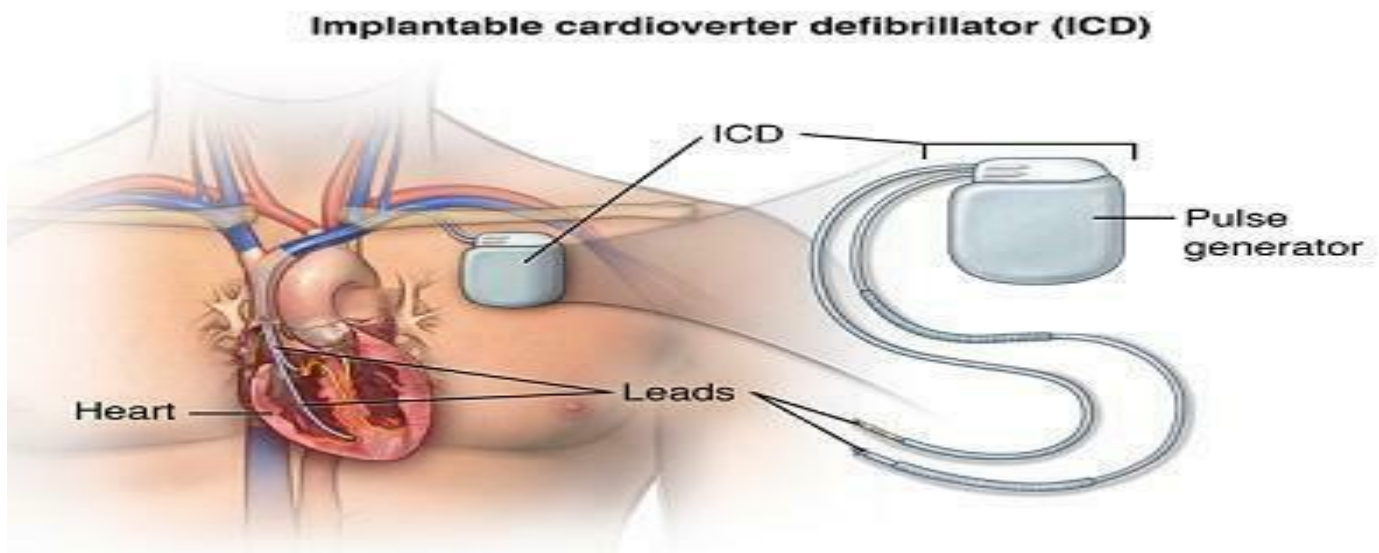
Our specialized doctors suggest patients maintain a healthy lifestyle that includes eating a low-fat diet, performing regular exercise, and removing smoking & alcohol from their daily schedule.

2. Medications

Medications are preferred by specialists when the lifestyle change does not work properly and can't see a result in treating the heart disease, and then doctors prescribe medications. The prescription varies from person to person according to the type of heart disease the patient has been diagnosed with.

3. Pacemakers or ICD

This treatment is mostly used for patients who are suffering from arrhythmia. A cardiac pacemaker or an implantable cardioverter-defibrillator (ICD) are tools that are implanted in the chest or abdomen to manage irregular heartbeats. Minor surgery is conducted to place the device.



4. Surgery

Surgeries are performed in cases where medication does not work as a treatment. The most common heart surgeries performed are coronary artery bypass grafting, Heart Valve Repair or Replacement and percutaneous coronary intervention and heart transplant; hence these are performed in serious heart conditions. People looking for a cardiology hospital in Jaipur must visit our state-of-the-art healthcare facility to get the best Cardiac surgery in Jaipur. We are also specialized in heart bypass surgery in Jaipur.

CKS hospital in Jaipur provides every option for cardiac patients of all ages, including:

- Vascular care
- Paediatric cardiology services
- Advanced heart failure treatments and heart transplants
- Cardiac clinical trials
- Cardiac rehabilitation and home care
- Health and integrative cardiac wellness

- Catheter-based solutions such as stenting and angioplasty
- Cardiac imaging and diagnostic testing
- Heart attack surgery
- Arrhythmia treatments including pacemakers, ablations, and defibrillators
- Adult congenital heart disease treatments
- Facilities at CKS Hospitals are by far the best and include:
- Cardiac Preventive & Nutrition Centre
- Advanced Heart Failure Centre
- Arrhythmia Centre
- Echocardiography (2D & 3D) Lab
- Cardiac Catheterization Lab
- Comprehensive Cardiovascular & Thoracic Surgery Services
- Electrophysiology Lab with 3D Cardiac Mapping & Radio Ablation System

2. Neurology / Neurosurgery-

Neurology/ Neurosurgery is the department of medicine that deals with the surgical intervention of the nervous system. The nervous system is a combination of the central and peripheral nervous systems. Brain and the spinal cord incorporate the central nervous system. The peripheral nervous system is controlled by the nerves and sensory receptors, organs such as the ears, eyes, skin, etc.

Brain surgery is required to repair structural problems in the brain. Brain problems occur due to congenital disabilities, ailments, injuries, and other issues.

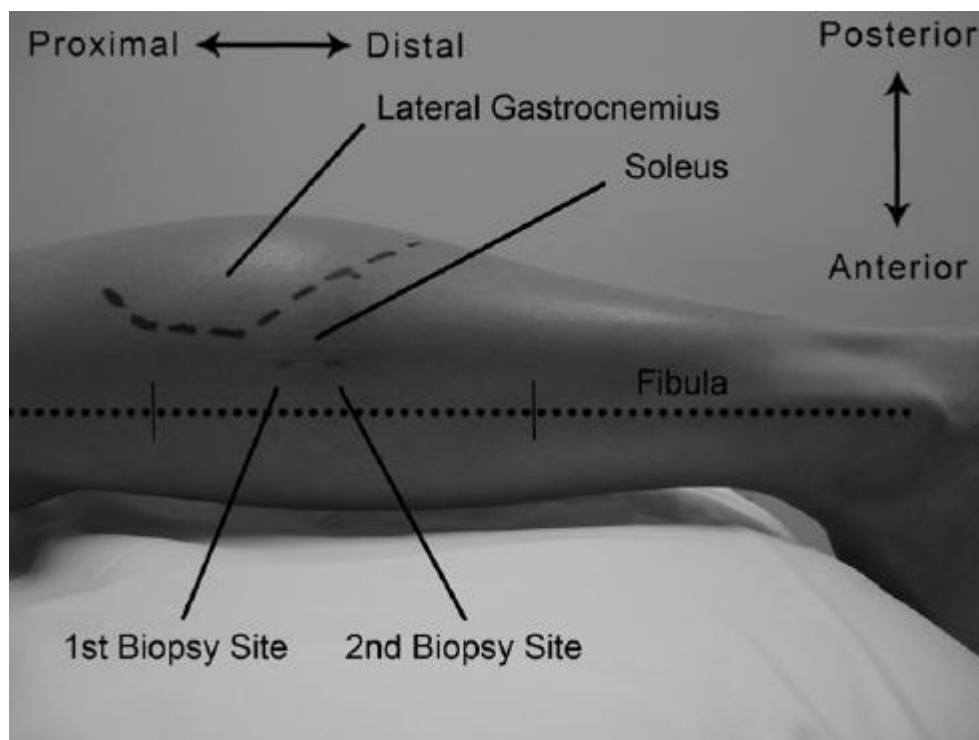


Types of Neurosurgeries

Neurosurgery can be broadly classified into:

- **Neuro-oncology:** This is focused on the brain and the spinal cord tumours

- **Functional Neurosurgery:** This is to treat conditions such as movement disorders, cerebral palsy, and epilepsy that falls under functional neurosurgery.
- **Neurovascular Surgery:** This speciality is focused on the blood vessels that supply the nervous system and other related conditions such as narrowing, aneurysms, etc.
- **Paediatric Neurosurgery:** Neurosurgery deals with the neurological problems that arise during the developmental and childhood stages. This treats congenital issues such as spina bifida, tumours and other anomalies.
- **Traumatology:** A neurosurgeon specialising in traumatology cures injuries of the nervous system, such as head injuries, through surgical intervention.
- **Spinal Surgery:** This is focused on spinal cord surgeries.
- **Skull-base surgery:** Neurosurgeons specialize in anomaly surgeries that occur at the skull base.



Treatment & Preventions

Neurosurgeons examine the need for surgery through diagnoses and afterwards recommend surgery for the brain. There are several brain surgeries a neurosurgeon performs, such as:

- **Craniotomy** (A craniotomy is the surgical removal of part of the bone from the skull to expose the brain. Specialized tools are used to remove the section of bone called the bone flap. The bone flap is temporarily removed, then replaced after the brain surgery has been done.)

- **Biopsy** (A biopsy is a procedure to remove a piece of tissue or a sample of cells from your body so that it can be analysed in a laboratory. If you're experiencing certain signs and symptoms or if your doctor has identified an area of concern, you may undergo a biopsy to determine whether you have cancer or some other condition.)

- **Minimally invasive endonasal endoscopic** (Endoscopic endonasal surgery is a minimally invasive technique that allows a surgeon to go through the nose to operate on areas at the front of the brain and the top of the spine. A thin tube called an endoscope is thread through your nose and sinuses)

- **Minimally invasive Neuroendoscopy** (is a minimally invasive surgical procedure in which the neurosurgeon removes the tumour through small holes (about the size of a dime) in the skull or through the mouth or nose.)

- **Deep brain stimulation** (is an elective surgical procedure in which electrodes are implanted into certain brain areas. These electrodes, or leads, generate electrical impulses that control abnormal brain activity. The electrical impulses can also adjust for the chemical imbalances within the brain that cause various conditions. Stimulation of brain areas is controlled by a programmable generator that is placed under the skin in the upper chest.)

Just after the brain surgery is completed, surgeons monitor the patient to see if everything is working fine or not. The stay time in the hospital can last up to a week. However, the stay is dependent on the type of procedure carried upon you. Doctors may prescribe you to take medications for some time after the surgery.

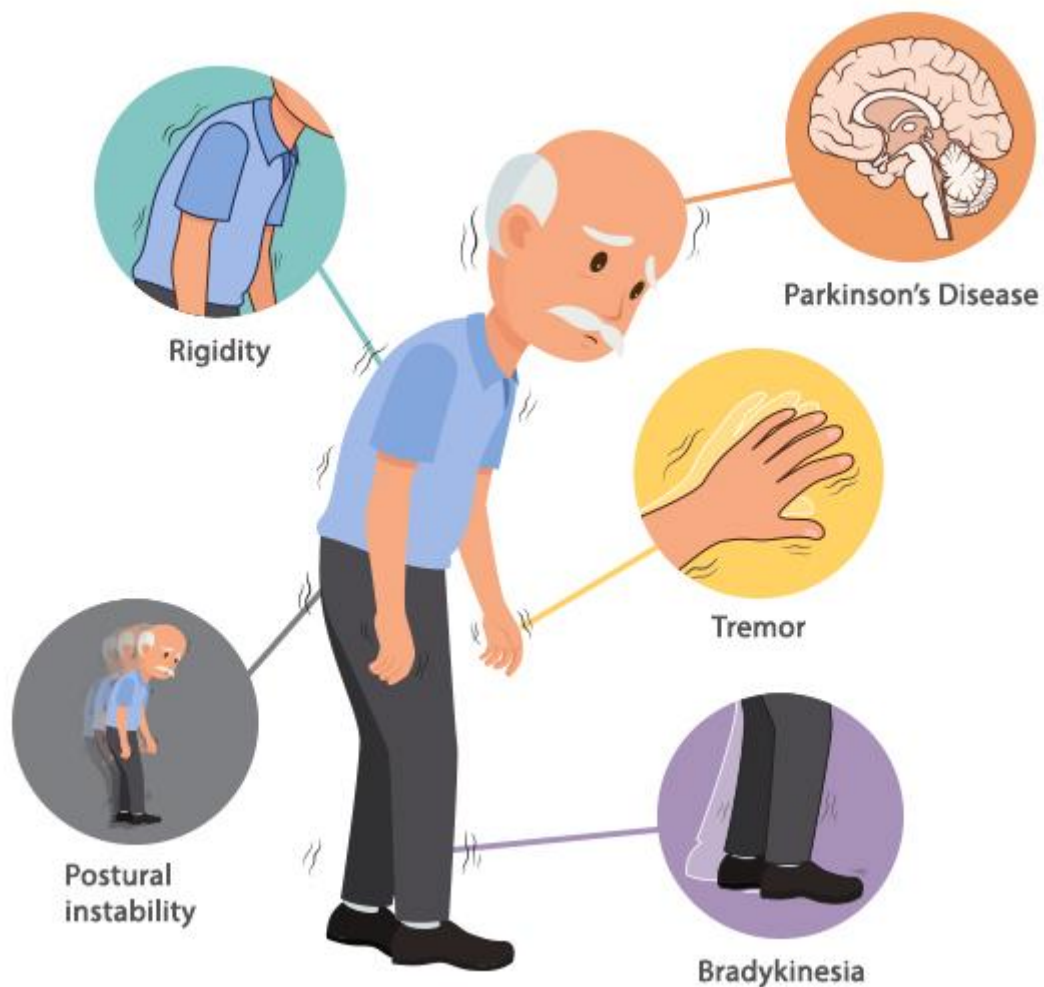
Managing all acute conditions like diabetes and [high blood pressure](#) under medical assistance is important to prevent neurological problems.

Neurosurgery is a treatment for some neurological ailments such as:

- Cerebrovascular problems such as aneurysms and blood clots
- Stroke
- Tumours
- Injuries
- Nerve damage

– Epilepsy

– Parkinson's disease



3. Urology-

CKS Hospitals, render comprehensive treatment for various urological ailments. state-of-the-art healthcare specializes in providing facilities in urology including uro-oncology, reconstructive urology, robotic surgery, kidney transplantation & laparoscopic andrology services and more. We are considered as one of the best urology hospitals in Jaipur, we comprise of the latest developments in the field of medical to provide patient-centric and safety care. The urinary tract is a body's drainage system

for the elimination of urine. Urine is a product of the consumed food and fluid that is excluded by the kidneys during the process of blood filtration.



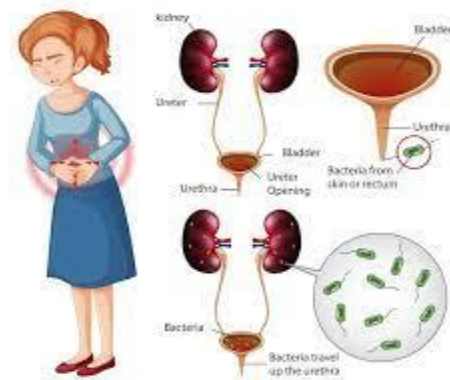
Symptoms of Urological Condition

Symptoms of the urological conditions that vary considerably. Depending on the type and extent of a patient's conditions here is the list of the symptoms:

- . Blood in urine
- . Painful urination
- . Difficulty while urinating
- . Frequent urge to urinate while bladder is empty
- . Urinary incontinence
- . Acute UTI's
- . Inadequate frequency of urination
- . Weakened urine stream

- . Pelvic pain
- . Lower abdomen discomfort
- . ED or infertility (impotence)
- . Hernia

Urinary tract infections



Urological Treatments-

Generally, urology ailments can be treated with the antibiotics as they are caused because of infections. Patient should complete the medication for faster recovery. The treatment depends upon the symptoms and the level of seriousness of the urological condition; urologists suggest treatment accordingly here are some underlying treatments that a urologist perform.

Lifestyle Changes-

In ailments like UTIs, urologist suggests some lifestyle changes to the patient and checks if symptoms come under control. Some of the lifestyle changes include limiting the quantity of caffeine, quitting smoking, drinking enough water to stay hydrated and intake of cranberry juice.

Medications-

Urologists prescribe medications to treat urological diseases. The medication begins from antibiotics to chemotherapy drugs; it varies on the type of urological condition individual is suffering from.

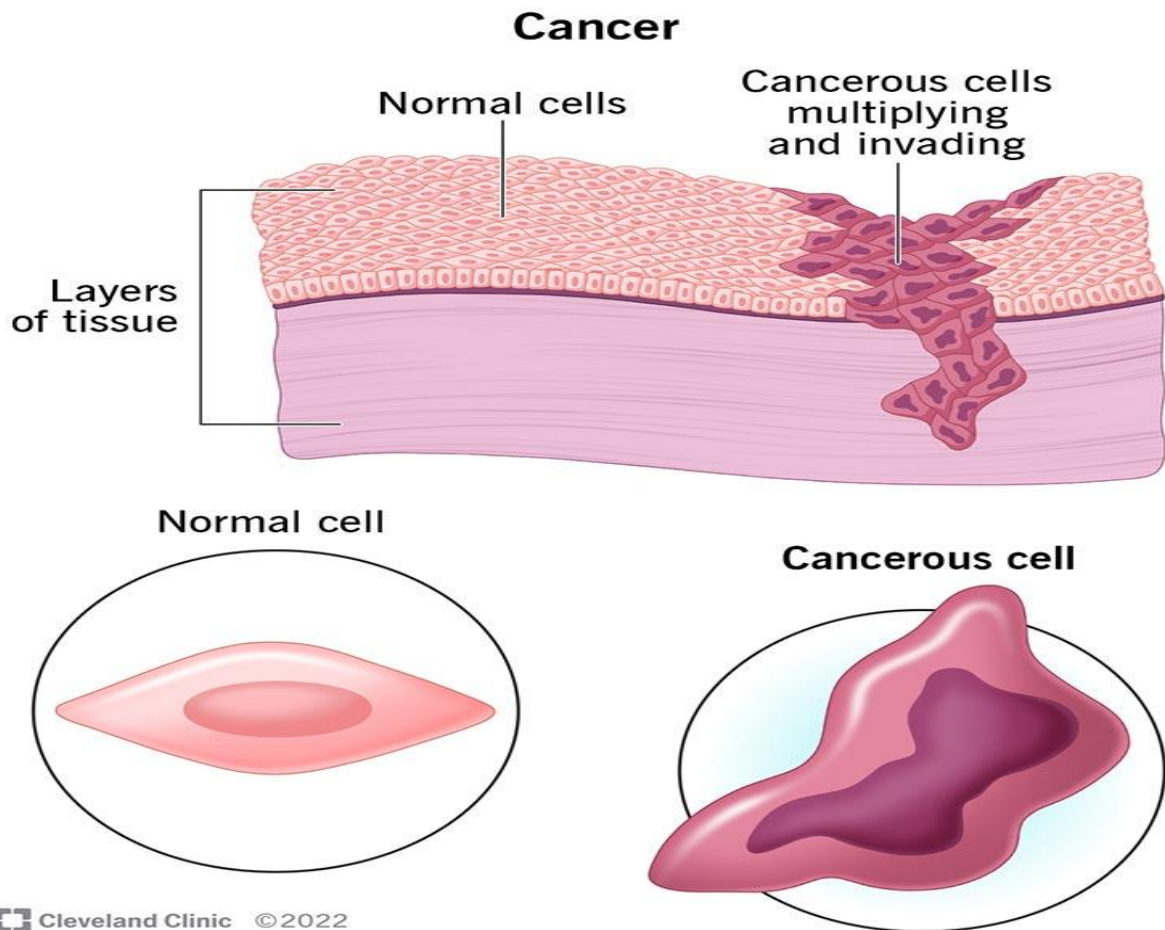
Surgery-

Surgical treatments are considered depending on the stage and ailment. The most of the common type of surgical procedures are laparoscopic urologic surgery, robotic surgery, kidney transplantation and reconstructive surgery of the urinary tract. Some other surgical treatments are:

- Biopsies of the bladder, kidneys, or prostate
- Cystectomy
- Extracorporeal shock-wave lithotripsy
- Prostatectomy
- Ureteroscopy
- Vasectomy
- Transurethral resection
- Transurethral needle ablation.

4. Oncology-

The Department of Oncology at CKS Hospital provides comprehensive and compassionate care to patients battling cancer. With a team of highly skilled oncologists, state-of-the-art technology, and a patient-centred approach, the department offers cutting-edge treatments across all stages of cancer. Our multidisciplinary team, including surgical, medical, and radiation oncologists, works together to tailor individualized treatment plans for optimal outcomes. At CKS Mult speciality Hospital, are committed to not only treating cancer but also supporting patients and their families throughout their journey to recovery.



Commonly Treated Cancers-

Oncology department specializes in the diagnosis and treatment of a wide range of cancers, including:

Urological Cancer-

Prostate, bladder, kidney, and testicular cancers are effectively managed with advanced surgical and non-surgical techniques.

Gynaecological Cancer-

Expertise in treating ovarian, uterine, cervical, and other gynecological cancers with precision and care.

Gastrointestinal Cancer-

Comprehensive care for stomach, colon, rectal, pancreatic, and esophageal cancers.

Sarcoma-

Specialized treatment for soft tissue and bone sarcomas, utilizing cutting-edge therapies.

Brain Tumours-

Advanced diagnostic and treatment options for both benign and malignant brain tumours.

Blood Cancer-

Multidisciplinary approach to leukaemia, lymphoma, and myeloma with innovative therapies.

Breast Cancer-

Personalized treatment plans for early-stage and advanced breast cancer, including reconstructive surgery.

Head and Neck Cancer-

Tailored therapies for cancers of the oral cavity, throat, and larynx.

Lung Cancer-

Comprehensive care for small-cell and non-small-cell lung cancers with the latest advancements

Commonly Treated Cancers:

Our oncology department specializes in the diagnosis and treatment of a wide range of cancers, including:

Urological Cancer

Prostate, bladder, kidney, and testicular cancers are effectively managed with advanced surgical and non-surgical techniques.

Gynecological Cancer

Expertise in treating ovarian, uterine, cervical, and other gynecological cancers with precision and care.

Gastrointestinal Cancer

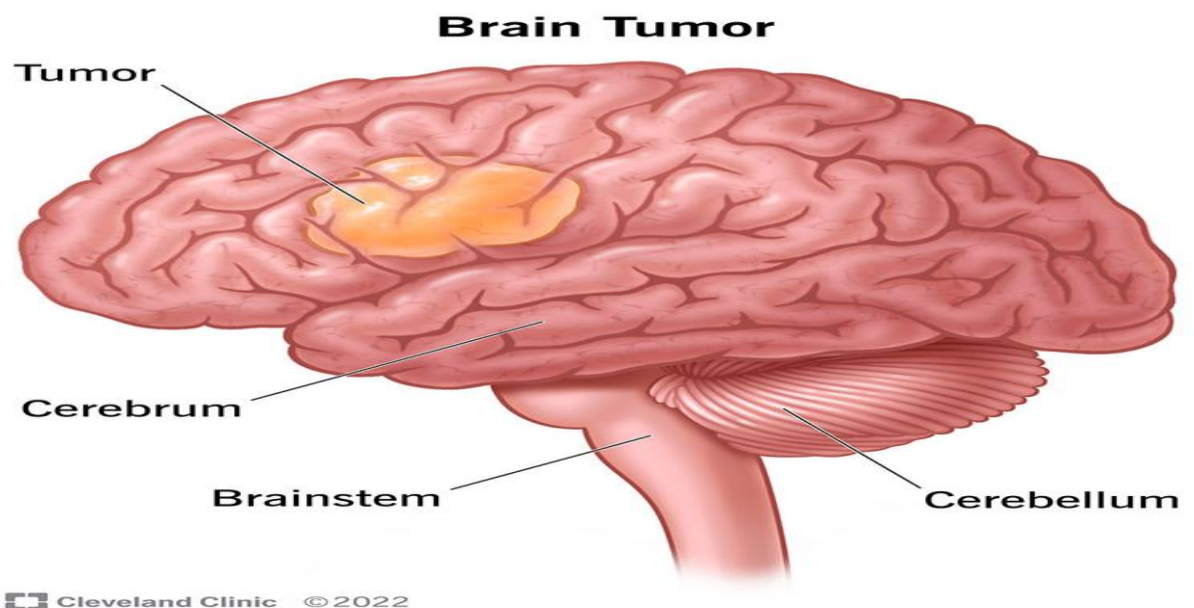
Comprehensive care for stomach, colon, rectal, pancreatic, and esophageal cancers.

Sarcoma

Specialized treatment for soft tissue and bone sarcomas, utilizing cutting-edge therapies.

Brain Tumors

Advanced diagnostic and treatment options for both benign and malignant brain tumors.



Blood Cancer

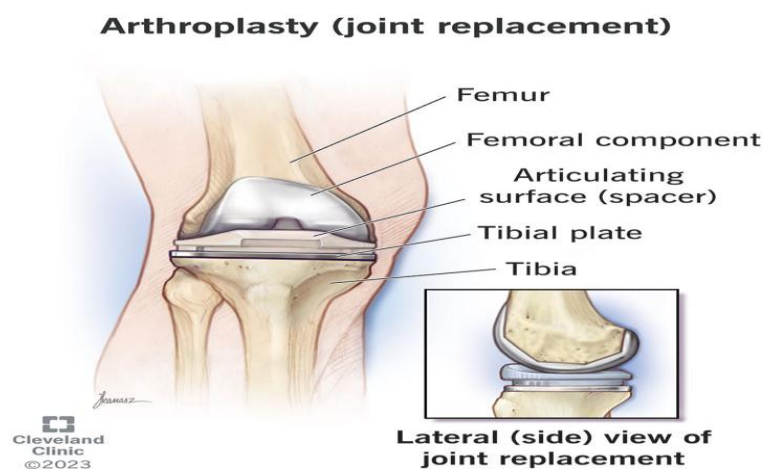
Multidisciplinary approach to leukaemia, lymphoma, and myeloma with innovative therapies.

Breast Cancer

Personalized treatment plans for early-stage and advanced breast cancer, including reconstructive surgery.

5. Orthopaedics & Joint Replacement-

CKS Hospital is one of the best orthopaedics hospitals in Jaipur, India, rendering comprehensive and world-class orthopaedic surgeon in Jaipur. This department offers specialized care in the field of complex trauma, poly-trauma and related sub-specialties. The Orthopaedic department at our hospital delivers personalized care while utilizing the latest research and advanced technology. The department provides treatment associated with the disorders of bone, joint and a range of musculoskeletal disorders. Orthopaedics doctors sometimes referred to as orthopaedic surgeons at CKS Hospital orthopaedic, focus on caring musculoskeletal system, including bones, joints, ligaments, nerves, and tendons.



Orthopaedic Treatments

Orthopaedic surgeons deal with the problems of musculoskeletal and provide several alternative treatments as per the patient's need, which may involve the following:

- Diagnosis of the injury or disorder
- Prescribing treatments like medication, exercise, surgery, casting, etc.
- Rehab. Centres or physical therapy to restore adequate movement, strength, and function of joints
- Preventing future injuries and slowing the development of diseases.

Apart from the musculoskeletal system's ailments and conditions, orthopaedics also specializes in certain other areas like the spine, shoulder, hand, foot, ankle, hip or knee. Other fields that they may choose to focus on include paediatrics, trauma, or sports medicine.

Diagnosis

Orthopaedic doctors/ orthopaedic surgeons will first ask patients about their medical record and afterwards perform any further physical examination.

After understanding and evaluating the previous medical history of the patient-doctor will then move forward to diagnostic studies, like x-rays and blood tests. After diagnosing, professionals let the patient know about the problem and suggest the most effective and suitable treatment plan to help them live an active and functional life. The treatment can either be nonsurgical or surgical, depending upon the seriousness of the ailment or condition.

Nonsurgical Treatment:

Certain musculoskeletal conditions may be treated without procedure/surgery. Orthopaedic surgeons or orthopaedic specialists prescribe a treatment that involves medication, exercise, rehabilitation or alternative natural therapies. In cases when the patient's condition doesn't respond to nonsurgical treatments, then orthopaedists recommend going for surgery.

Surgical Treatment:

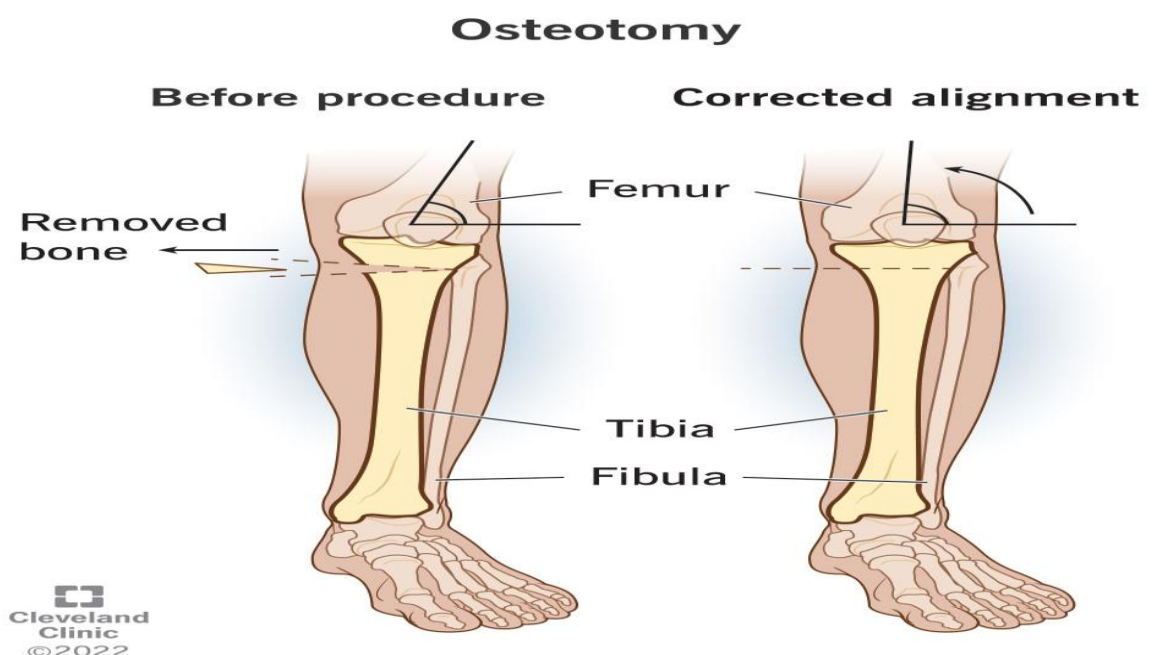
There are several kinds of surgeries that an orthopaedic surgeon can perform. Some of the common procedures include:

Arthroscopy: This procedure is used to detect and treat conditions inside a joint where equipment used attached with a camera helps surgeons visualize easily.

Joint replacement: Joint replacement may be a partial, total or revision surgery treatment. This surgery arthritic or damaged joint is removed or replaced with an artificial joint referred to as a prosthesis.

Fusion involves fusing bones with bone grafts and internal devices like metal rods to heal into a single solid bone.

Osteotomy: Repositioning and Cutting the bone to correct bone deformity



Internal fixation: This method involves using metal plates, pins or screws to carry the broken pieces of bone properly.

When Do You Need to See an Orthopaedic Doctor?

Muscle and joint pain could be short-term and go away on their own if you had them during an injury. However, if your pain lasts for more than 3-5 days, you may need to consult the best orthopaedic hospital in Jaipur, Rajasthan, if:

- – Finding difficulty to move as you used to do before the injury
- – Unstable while walking or standing
- – Experiencing difficulty in performing daily activities, like walking, standing, and even while resting.

We also offer various central and state healthcare schemes, ensuring that patients can receive the best treatments without any financial problems. The hospital is accredited under various quality standards and strives to align its operations with best practices in hospital management and patient care. It caters to a diverse patient demographic, including those covered under Ayushman Bharat, ECHS, RGHS, CGHS, TPA insurance, and private payors.

Given its multidisciplinary nature and high patient turnover, CKS Hospital's Operations Department plays a vital role in managing patient flow, especially during the admission and discharge processes. The hospital recognizes the importance of operational efficiency in enhancing patient satisfaction, which makes it an ideal setting for conducting a Time Motion Study on the discharge process.

The insights from this study are expected to contribute toward streamlining processes, reducing patient discharge times, and improving the overall healthcare delivery system at CKS Hospital.

Discharge Process:

Discharge is to formally terminate a patient's care and releasing him/her from a hospital or health care facility. A patient is discharged only when he/she has recovered fully or satisfactorily according to the concerned physician.

It is imperative to have a timely discharge. A delayed discharge has an impact on the physical, mental, emotional, and psychological status of the patient and also has negative financial implications on the hospital. A patient staying longer than the stipulated time is responsible for unnecessary utilization of the hospital resources and is sheer waste.

"A good discharge experience leaves the patient with positive emotions and strong affinity for returning to the facility" - Paul Clark.

A hospital is the centre for cure but one cannot rule out it being a source of infection especially to the vulnerable individuals. One such vulnerable category is patients who have just recovered from their illness and are ready for discharge.

It is in the interest of the hospital to hasten the discharge process as

- It will reduce the chances of HAI for the patient.
- Better experience as the patient leaves.
- Reduce anxiety and restlessness of patient and the family.
- The bed is made ready for the next patient who is in more need.
- Better and apt utilization of resources per bed.

Delayed discharge (sometimes referred to as delayed transfer or bed blocking), refers to the situation where a patient is deemed to be medically well enough for discharge, but, where the patient is unable to leave hospital due to slowing down of the entire process.

A patient visiting a hospital expects complete care from the time of admission to the time of discharge, along with, complete medical care and advice. Although most of these expectations are met, the patient is still eager to leave the hospital premises at the

earliest possible. Discharge process remains an area of concern in terms of the time taken for its completion.

Lengthy ineffective process for inpatient discharge is a common concern of hospitals, as it is an important factor resulting in patient dissatisfaction and a negative image of the hospital.

A major weakness of the discharge process is the relative lack of attention to detail from the hospital team at the time of discharge, compared to the admission process. The energy with which we approach a new admission often dwindles to that which is needed solely to get the patient out of the door. This further leads to an increase in patient anxiety and apprehension; subsequently resulting in a negative cascading effect on the hospital routine, as well as the patient's routine.

The development and improvement in the discharge process requires a detailed insight into the discharge process being followed and the understanding of the reasons for delay in the hospital.

Quality Healthcare:

Health care's interest in quality management has followed the lead of the manufacturing industry, originally focusing on retrospective review of products and outcomes and eventually undertaking concurrent reviews focused on processes. Critical to such reviews is a healthcare organizations use of an information system that incorporates departmental data into a hospital-wide framework, includes objective criteria for evaluating procedures and outcomes, and tracks modifications to an organization's processes for care delivery. The goal of an integrated, patient-centred information system is to establish a continuous cycle for improving clinical and administrative quality within an organization.

Improving quality while simultaneously reducing costs has replaced cost containment alone as the critical concern facing hospitals. Hospitals are discovering a need to collect data on quality and demonstrate that patient care provides quantifiable benefits, including positive outcomes, wellness, and value at all levels of an institution. Still,

total quality management (TQM) programs implemented at many hospitals primarily focus on improving administrative and ancillary processes. A vital but often neglected aspect of TQM is clinical patient care, the area in which continuous quality improvement promises the greatest return for hospitals. Designing information systems to support a patient-centred, dynamic quality control process is one of health care's greatest challenges today. By identifying and managing the link between quality and cost, hospitals can reduce costs and achieve continuous quality improvement.

Different organizations use different methodologies, approaches and tools for implementing a quality management and programmes for continuous quality improvement. The program is likely to have a different name or label, such as TQM (Total Quality Management), BPR (Business Process Re-engineering), Operational Excellence or Business Excellence. Regardless of the methodology, approach, tool or the name of the continuous improvement programs, each organization will certainly need to use a proper selection and combination of different approaches, tools and techniques in its implementation process.

Information to resident's doctors about planned discharge patients and medicines are returned to pharmacy as per SOPs



Preparation of discharge summary on selected format on paper and typed in monitoring by medical coder



Early morning duty doctor's visits patients and noted vital parameters and change in medicines if required



After consultant round billing activity sheet is sent with GDA to be billing counter



Financial billing is executed by comparing all billing sheet financial counselling and other forms if pharma clearance is already done



In between discharge summary corrections are cleared and typed correctly get signed by respected consultant or duty doctor authorize panel



Patient attendant is getting informed by billing department cell via nurse staff information for amount to be deposited



Patient attendant deposited amount at billing counter and gets a no dues slip from which needs to be hand over to allocating staff or nurse in charge at nurse station on floors



Patient attendant hand overs no due slip at nursing station after this procedure post discharge procedure gets started



Patient cannula removes, clothes changes, medicine counselling, lunch delivers if patient demand according to diet chart, feedback form get it filled by dietician



Allocated staff handover compiled file with reports and calls GDA for wheel



Patient is being discharged with the help of GDA on wheelchair



A call is to be made to housekeeping in charge for maintenance of used and a call is to be done at bed manager in IPD counter to tell availability of new beds if required.

Workflow Process of Discharge

Problem Statement:

Despite advancements in hospital infrastructure and digitization, delays in the patient discharge process continue to be a common operational inefficiency. At CKS Hospital, Jaipur, anecdotal evidence and informal feedback suggest that patients often experience prolonged wait times during discharge, caused by interdepartmental delays, lack of coordination, and non-standardized workflows. These delays not only affect patient satisfaction but also reduce bed availability, impacting emergency admissions and hospital revenue. There is a pressing need to scientifically analyse the discharge process to identify specific time-consuming steps and introduce corrective actions.

Rationale of the Study:

The discharge process is one of the final touchpoints in a patient's hospital journey, and it significantly influences their overall perception of hospital service quality. An efficient discharge process enhances patient satisfaction, increases bed turnover, improves clinical workflow, and strengthens administrative coordination. However, many hospitals in India, including CKS Hospital, still rely on manual or semi-automated systems, which introduce unnecessary delays. This study uses a Time Motion Study (TMS) to empirically track, measure, and analysed the time taken at each stage of the discharge process. The rationale is to provide actionable insights that can be used to streamline workflows and establish a standardized discharge protocol.

Aim of the Study:

To analyses and optimize the patient discharge process through time motion study in the Operations Department at CKS Hospital, Jaipur, with the objective of reducing turnaround time and improving operational efficiency.

Objective of the Study:

- To maps the existing discharge process and identify each step involved from discharge initiation to patient exit.
- To record and analyses the time taken for each component of the discharge process.
- To identify bottlenecks, redundancies, or delays in the current discharge workflow.
- To assess staff coordination and departmental interdependence during the discharge.
- To provide evidence-based recommendations for optimizing the discharge process and reducing overall discharge time.

Scope of the Study:

- The study is confined to the Operations Department of CKS Hospital, Jaipur.
- It focuses specifically on in-patient discharges, excluding emergency or outpatient discharges.
- Time Motion Study will be conducted by observing a sample of discharge cases over a defined period.
- The study includes the involvement of departments such as nursing, billing, pharmacy, housekeeping, and treating doctors.
- The research does not cover post-discharge follow-up procedures or clinical outcomes.

Significance of the Study:

This study holds practical significance for both hospital administrators and patients. By identifying time-consuming steps and gaps in coordination, the hospital can implement targeted interventions to reduce discharge time, improve bed availability, and enhance patient satisfaction. The findings will serve as a model for other mid-sized private hospitals in India seeking to optimize operational workflows through data-driven quality improvement techniques. Additionally, the study supports accreditation goals (e.g., NABH) by promoting standardization and efficiency in care delivery processes.

CHAPTER 2

Review of Literature

Hospital-based medication reconciliation (MedRec) is defined as the process of identifying the most accurate list of a patient's preadmission medications including the name, dosage, frequency route, last dose taken and assessment of adherence, comparing them to the current medication orders, recognizing and addressing discrepancies, and documenting any changes, thus resulting in a 'Best Possible Medication History (BPMH)'. MedRec is a component of medication management, which involves the wider and more important evaluation of diagnoses, contraindications, patient values, and evidence for comparative cost-effectiveness of medications to craft and communicate the most appropriate medication regimen for the patient.

In response to a perceived medication safety crisis, MedRec was mandated by national hospital accreditation bodies in Canada and the USA in 2006 as a Required Organizational Practice (ROP), and has been recommended by the National Institute of Health and Care Excellence in the UK.¹² This major change in system responsibility, work flow and healthcare professional priorities, without accompanying personnel or information technology support, was based entirely on literature using avoidance of 'potential medication errors' as a primary outcome.

MedRec ROPs in the USA had to be scaled back due to the failure of proponents to recognise the complexity and costs of the process, and hospitals' inability to meet requirements for widespread MedRec across the continuum of care. Similarly, Canadian hospitals are struggling to meet ROPs for admission MedRec with 57.4% overall compliance, are even further behind on discharge MedRec, and are not yet documenting MedRec on transfers.¹³ While studies have documented medication discrepancies based on MedRec, noted suboptimal communication strategies around medication management, or offered commonly held views as to why MedRec is not reaching its goals, 4-9 no studies were identified in our literature review that carefully

detailed current processes to understand barriers preventing success, or to document resource usage.

At least seven systematic reviews summarize randomized controlled trials (RCTs) and non-RCTs examining the impact of MedRec, either alone or as part of a more comprehensive medication management intervention on reducing adverse drug events and healthcare usage across multiple settings (hospitals, primary care, long-term care).¹⁰⁻¹⁶ The conclusion of each review is remarkably consistent - well done MedRec reduces unintended medication discrepancies but the impact on clinical outcomes is uncertain. After restricting studies to those with a lower risk of bias, there is no evidence of beneficial effect on mortality or hospital readmission, although low-quality evidence suggests a trend towards decreased emergency department (ED) contact.

1. Prevention of delay in patient discharge process- an Emphasis on Nurse's role:

In this study by Peter R, Jessica E, Zaltmann G, planning for a patients post discharge care does not begin on the day when decision is made to release the patient from hospital. It is generally accepted that discharge planning should start before admission or at the time of admission. A combination of various factors like age, multiple pathology and organizational factors like lack of alternative forms of care facilities put patient at risk of delayed discharge. In this article the author provides strategies to improve nurse's participation in discharge planning.

2. The Discharge planning process / Process Improvement:

In the study by Shepperd S. et al, discharge planning is critical to ensuring rapid, safe and smooth transition from hospital to another care environment; it involves social work functions of high-risk screening, social work assessment, counselling, locating and arranging services, consultation/collaboration, patient and family education, patient advocacy and chart documentation. It is a complex activity requiring a wide range of clinical and organizational skills to address needs of patient, family, and health

care systems and to promote optimum functioning of patients, families and support systems.

Delay factors may be internal like waiting for discharge summaries, external like convalescence, palliative care and psychological like social isolation of patient, inadequate support at home, lack of medical aids etc.

3. Research review on tracking Delayed Discharge:

In the study by Zehner, R.B. Mofitt R, a combination of individual, medical and organizational factors interact to put people at risk of delayed discharge. The Literature review identifies that older people, those with multiple pathology and those with some specific conditions such as neurological deficit are most at risk. In other words it is not the clinical conditions that are causing delay but how the organization is managing services to care for these groups.

4. Improving the hospital discharge process with Six Sigma Methods at Gulf Medical College Hospital & Research Centre:

This project describes the application of a five-phase Six Sigma define, measure, analyse, improve, and control (DMAIC) approach to streamline patient discharge at Gulf Medical College Hospital & Research Centre. Within the context of the five phases, the tools which have been applied to make decisions are: Control Charts (Statistical Process control Charting, SPC) Process Mapping, Cause-and-Effect Matrices).

Based on the data collected and analysed, the interview sessions held with the care providers and the observations made during the study period various recommendations have been suggested. These can be used in the implement phase to collect baseline data after the recommendations are adopted to improve the discharge process.

CHAPTER 3

Methodology

Study Design:

This study adopts a descriptive and observational research design, using Time Motion Study (TMS) as the primary method to measure and evaluate the discharge process. The design involves direct observation, time tracking, and workflow mapping to identify inefficiencies in real-time hospital operations.

Settings:

The study was conducted at CKS Hospital, Jaipur which is ‘The Multi Super Speciality Hospital’, specifically within the Operations Department, which coordinates patient movement across various units and facilitates the discharge process in collaboration with clinical, nursing, pharmacy, and billing departments.

Duration of study:

Three Months The study was carried out over a period of **2-months**, from (10Th March – 10th May), capturing a representative sample of weekday and weekend discharges to ensure accuracy and reliability.

Sample Size:

100 Patients

Sample Area:

5th Floor (General Ward, ICU)- 30 BED & 28 BED

6th Floor (semi/deluxe)- 28 BED & 14 BED

Sample Technique:

A purposive sampling technique was used to select a total of 20 discharge cases from different departments (e.g., Cardiology, Neurology, Urology, Gynaecology,

Orthopaedics, etc.). This ensured a mix of cases with varying levels of complexity, insurance types, and discharge timings.

Sample Selection:

Inclusion- 100 Patients are collected in which 74 Patients are of Govt. Health SCHEME, 18 Patients are of TPA category and 8 patient Self categories.

Data collection Procedure:

A questionnaire is designed to access organization process and staff assessment level of discharge process.

A checklist is also being prepared for record each step of discharge process and random data are to be filled to access selection bias.

Time tracking was done using digital tools to record the duration of each step.

Qualitative observations were recorded related to staff behaviour, patient queries, or workflow delays.

The existing workflow was mapped to visualize the sequence and dependencies of each discharge activity.

Data Analysis Procedure:

Calculation of questionnaire and checklist events or selected option score of each respondent or events and average score describe subjective perception of study and by preparation of suitable graph indicates gap area needed to fulfil.

Patient Distribution:

Category	No. of Patients
Self-Pay	8
TPA	18
GOVT. Health Scheme	74

Floor	Category	No. of Patients
5th Floor (General ward & ICU)	Self-Pay, TPA, Govt. Health scheme	1268
6 th Floor (Semi/Deluxe)	Self-Pay, TPA, GOVT. Health Scheme	840

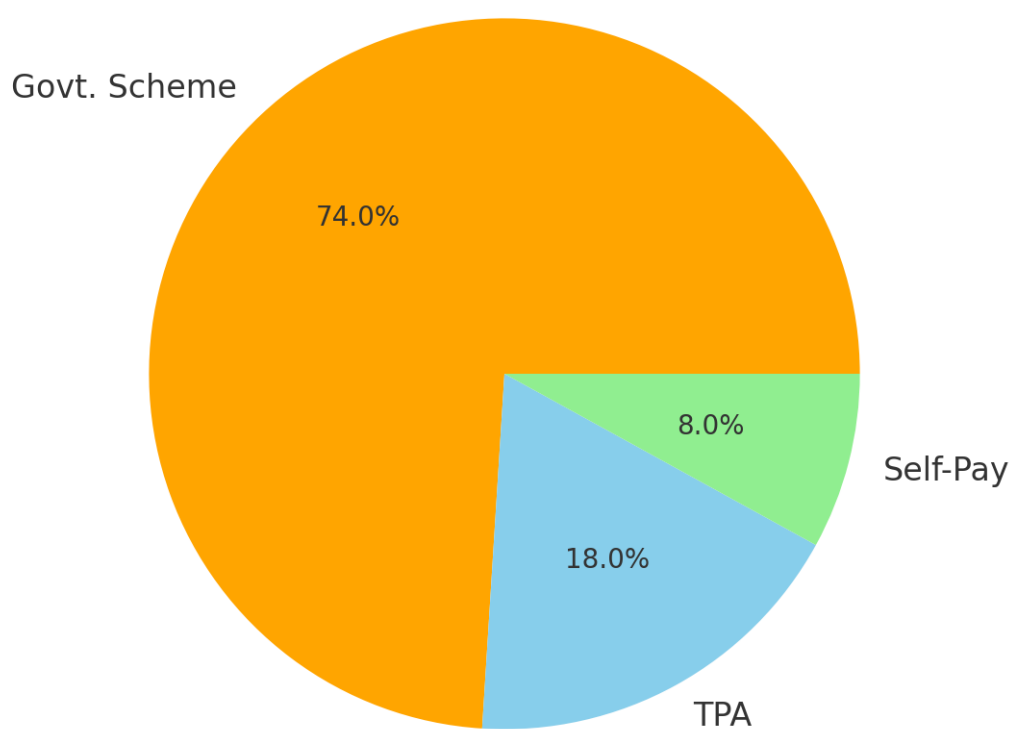
Quantitative data (timings) were entered in Microsoft Excel and analyzed using descriptive statistics such as:

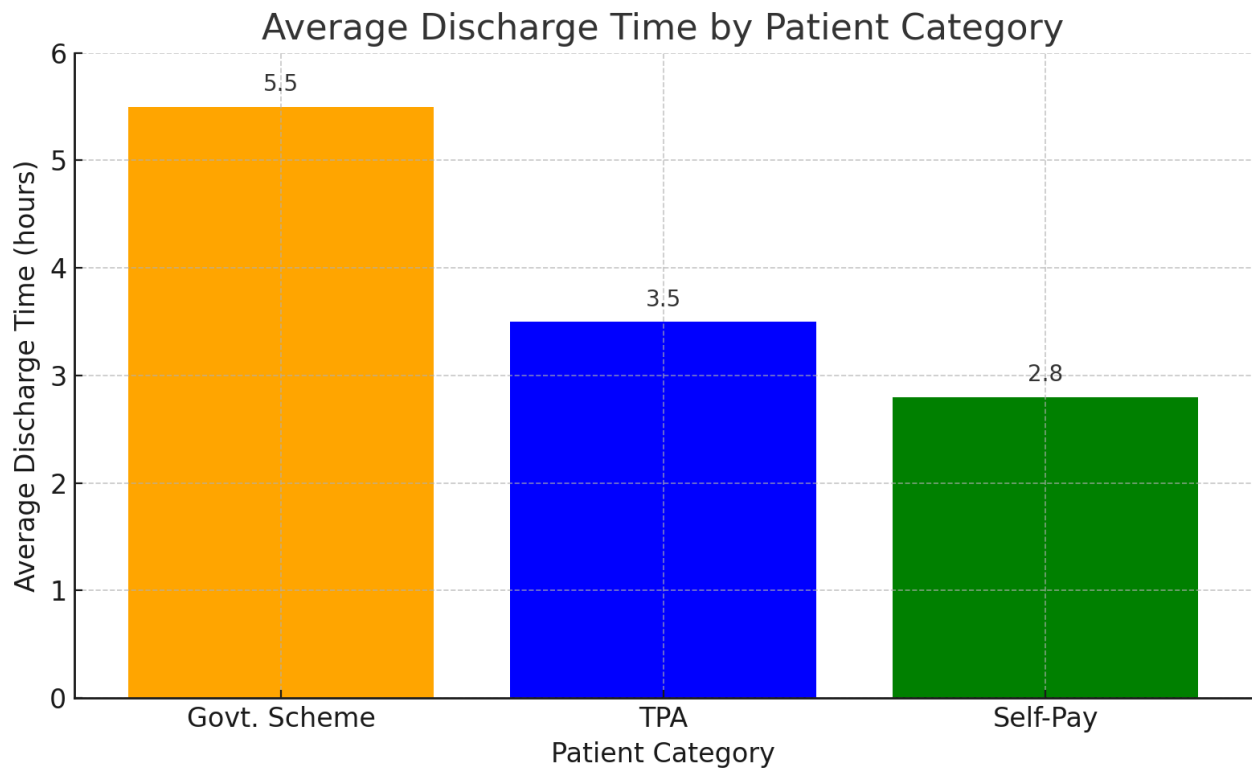
- Mean, Median, and Range of total discharge time
- Department-wise average discharge time
- Time spent per activity

CHAPTER 4

Results

Patient Distribution by Category





1. Patient Distribution by Category:

- Government Scheme Patients: 74%
- TPA Patients: 18%
- Self-Pay Patients: 8%

2. Average Discharge Times (based on Time Motion Study):

- Govt. Scheme: ~5.5 hours
- TPA: ~3.5 hours
- Self-Pay: ~2.8 hours

3. Key Observations:

- Govt. scheme discharges face the longest delays due to additional documentation and scheme approvals.
- TPA patients experience moderate wait times, primarily from insurer coordination and verification.

- Self-pay patients have the fastest discharge turnaround, attributed to direct billing and simplified process flow.

4. Contributing Delay Factors:

- Delay in finalizing and correcting discharge summaries.
- Pharmacy clearance, particularly for scheme-based patients.
- Communication lag between floors and billing department.
- Inconsistent shift-wise staff coordination.

Average Time by Hours Category:

Category	Average Time (hrs)
Govt. Scheme	5.5
TPA	3.5
Self-Pay	2.8

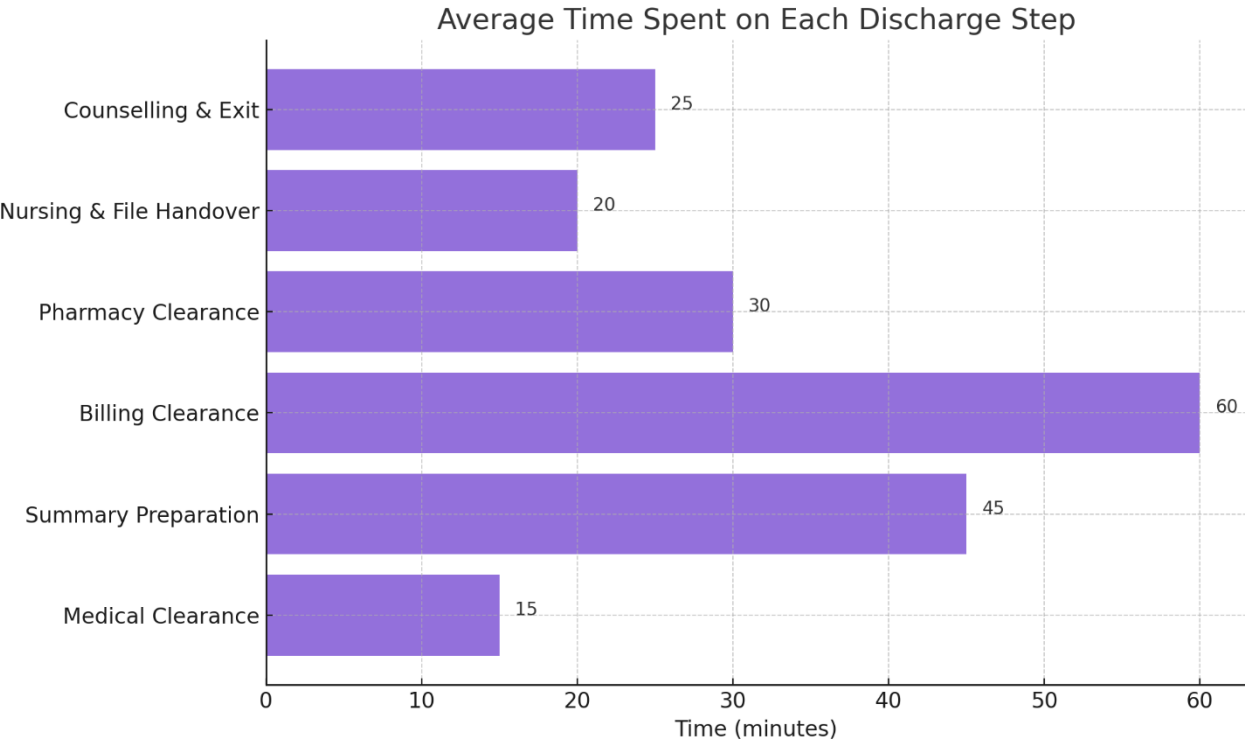
Interpretation:

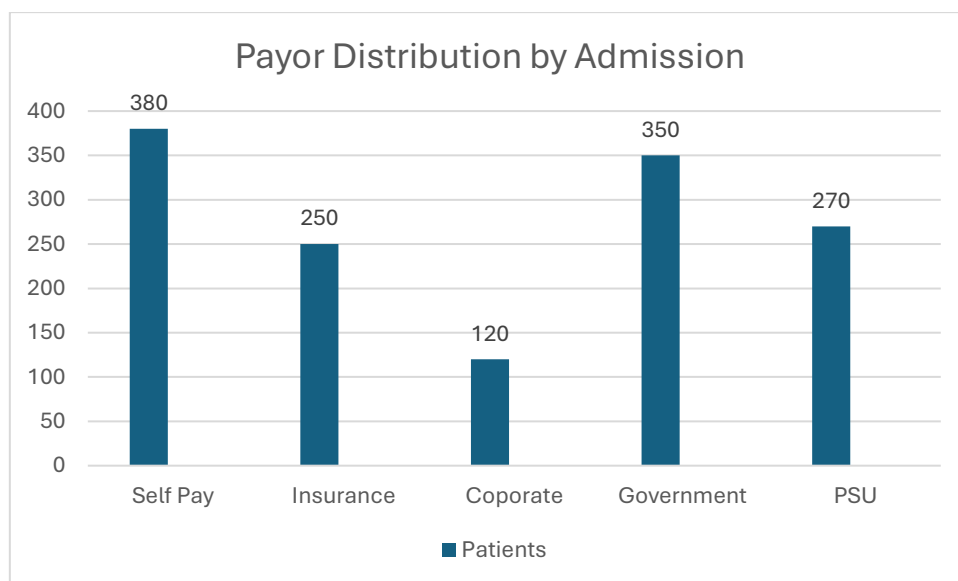
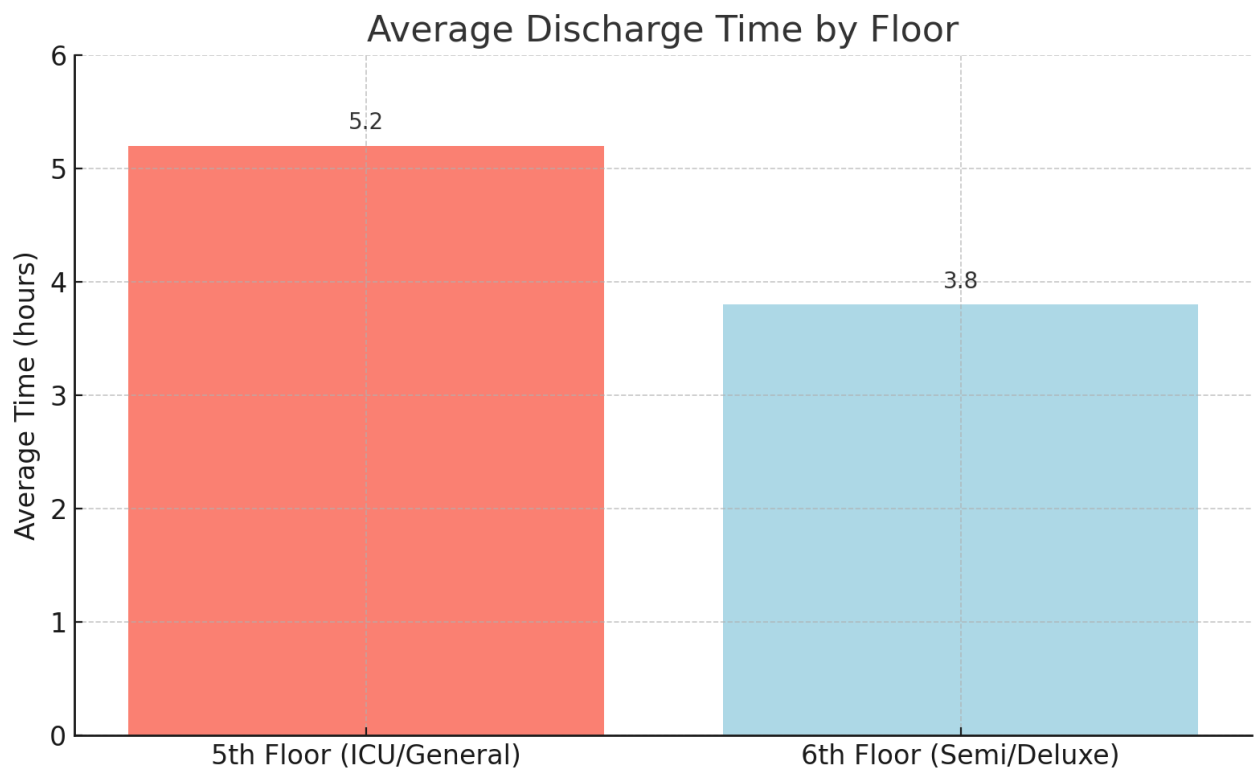
Government health scheme patients experience the longest delays due to complex documentation and mandatory approvals. TPA patients face moderate delays due to coordination with insurance companies. Self-pay patients experience minimal delay due to direct billing and simplified steps.

Key Delay Contributors Identified:

1. Manual Typing of Summaries

- 2. Consultant Signature Wait Times
- 3. Delayed Financial Counselling
- 4. Paper-based Scheme Clearance Processes
- 5. Lack of Discharge Notification to Pharmacy in Advance
- 6. GDA/Transport Staff Availability During Peak Hours





CHAPTER 5

DISCUSSION

Staff Feedback Analysis

- 85% staff reported discharge summary delay as the most time-consuming step.
- 78% of billing staff cited lack of advance intimation from floors.
- 90% of respondents supported digital discharge dashboards for better interdepartmental coordination.
- 62% suggested that early morning discharge planning (before 11:00 AM) could reduce delays.

Systemic Gaps Identified

- No automated discharge tracking system in place
- Manual workflow followed in summary creation and billing sheet transfer
- Absence of checklists for pre-discharge readiness
- Inconsistent discharge planning among departments

Positive Practices Noted

- Early discharge planning led to smoother TAT (<3 hours)
- Pre-informed pharmacy clearance reduced wait time
- Nursing staff involvement in explaining discharge protocol improved patient satisfaction

CHAPTER 6

CONCLUSION

The study undertaken at CKS Hospital, Jaipur, reveals critical insights into the existing discharge process and the challenges that hinder its efficiency. By applying the Time Motion Study (TMS) methodology, the discharge workflow was meticulously observed and analysed. The findings indicate that while discharge processes are standardized in theory, real-time execution suffers from delays due to interdepartmental miscommunication, manual documentation, lack of automation, and bottlenecks in billing and pharmacy clearance.

Notably, the study identified that delays primarily occur in the preparation of discharge summaries, financial clearance, and coordination between nursing staff and administrative units. Patients under government schemes, who formed the majority of the study sample, faced longer discharge times owing to the added documentation and approvals.

The research suggests that streamlining the workflow using digitized discharge tracking tools, early morning discharge planning, and better interdepartmental coordination can significantly reduce patient discharge turnaround time. Training frontline staff, particularly nurses and billing executives, and adopting a proactive discharge planning approach can also contribute to smoother and faster discharge outcomes.

Overall, the study underlines the importance of real-time data tracking, cross-functional teamwork, and a patient-centric mindset in optimizing hospital operations. By implementing the proposed recommendations, CKS Hospital can enhance patient satisfaction, reduce waiting times, and improve bed turnover rates, thereby boosting both operational efficiency and hospital reputation.

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ANNEXURES

Annexures

Annexure I: Discharge Process Flowchart (Current vs Proposed)

This annexure includes two flowcharts:

1. Current Discharge Workflow – illustrating the existing process from discharge initiation to patient exit.
2. Proposed Optimized Workflow – incorporating digitization, improved coordination, and reduced delay strategies.

(Note: Flowcharts are to be inserted as diagrams or screenshots.)

Annexure II: Sample Checklist Used for Observing Discharge Steps

- Date
- Patient ID (Anonymized)
- Department
- Time discharge initiated
- Time summary prepared
- Time billing started/completed
- Time pharmacy clearance obtained
- Time patient informed
- Time file handover
- Time discharge completed

Annexure III: Time Motion Study Format (Daily Observation Sheets)

Example format for recording time observations:

| Step | Time Started | Time Ended | Duration | Remarks |

| Summary Prep | 9:00 AM | 9:30 AM | 30 min | Delay due to pending doctor sign |

Annexure IV: Questionnaire Used for Staff Assessment

1. Are you aware of the current discharge protocol?
2. What delays do you frequently observe?
3. Is interdepartmental coordination effective?
4. Do you think digital tracking would help?
5. Suggestions for improving the discharge process.

Annexure V: Data Tables of Discharge Timings (Patient-wise)

This annexure includes anonymized patient data showing timing for each discharge step and overall turnaround time.

Annexure VI: Comparative Graphs and Charts

Includes:

- Average discharge time per category (Self, TPA, Govt)
- Percentage time spent per step
- Number of discharges per floor and department

Annexure VII: Consent Form Format

Sample Consent Text:

"I hereby give my voluntary consent to participate in the Time Motion Study being conducted at CKS Hospital, Jaipur. I understand that my identity will remain confidential and the data will be used for academic and quality improvement purposes only."

Name:

Signature:

Date:

Annexure VIII: Sample Discharge Summary (Anonymized)

A redacted copy of a typical discharge summary used in the hospital including:

- Patient details (anonymized)
- Diagnosis
- Treatment provided
- Medications prescribed
- Follow-up instructions

Annexure IX: Feedback Form Format

Feedback Form Questions:

1. Was the discharge process explained to you clearly?
2. Were you informed about delays (if any)?
3. Were the billing and documentation smooth?
4. Overall rating of the discharge process:
[] Excellent [] Good [] Average [] Poor

Annexure X: NABH Guidelines Related to Discharge Standards

This annexure includes excerpts and references from NABH accreditation guidelines relevant to discharge planning, documentation, and patient rights.

Reference: NABH Hospital Accreditation Standards, 5th Edition, Chapter 9 (Access, Assessment, and Continuity of Care)