

**ENHANCING OPERATIONAL EFFICIENCY AND PATIENT SATISFACTION
IN THE INTERVENTIONAL RADIOLOGY DEPARTMENT AT MEDANTA
HOSPITAL GURGAON, HARYANA**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

By

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Under the Supervision and Guidance of

Dr Tripti Bisawa

2024



Date: 22-Jun-2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Aparna Dubey (ID-00063476)** is associated with **Global Health Ltd (GHL), Medanta - The Medicity** since 18-Mar-2024. She is engaged with us as Trainee - Medical Administration & Clinical Operations at the below mentioned official address:-

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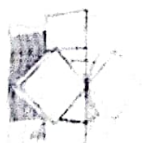
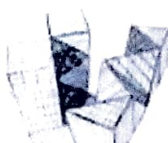
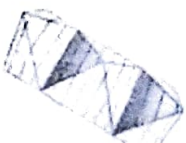
This letter is issued on her specific request to apply for exam purpose.

For Global Health Ltd

A handwritten signature in blue ink, appearing to read "Ranshul Aggarwal", is written over a faint, circular blue stamp.

Ranshul Aggarwal

Deputy General Manager - Human Resources



DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Enhancing Operational Efficiency and Patient Satisfaction in the Interventional Radiology Department at Medanta Hospital Gurgaon, Haryana** 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 degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



(Signature)

Name of Student APARNA DUBEY

Date: 1/7/24

CERTIFICATE

This is to certify that dissertation titled **Enhancing Operational Efficiency and Patient Satisfaction in the Interventional Radiology Department at Medanta Hospital Gurgaon, Haryana** is a record of the research work undertaken by Dr Aparna Dubey in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.



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ABSTRACT

Introduction

Medanta-The Medicity was founded by Dr. Naresh Trehan to address the healthcare needs of Indian patients who could not afford to travel abroad for treatment. With a vision to provide affordable, high-quality healthcare integrating modern and traditional Indian medical practices, Medanta has grown into India's top private hospital. Medanta is guided by core values such as patient-centric care, leadership and quality, integrity and courage, and collaboration, learning, and innovation. The hospital offers a wide range of specialties and services, including a dedicated Interventional Radiology (IR) department that focuses on minimally invasive, image-guided treatments.

Objectives

The objective of this study is to identify and address the existing issues in operating the Interventional Radiology department at Medanta Gurgaon. The main aims are thus to measure cancellation rates, schedule reliability, compliance with NPO and the use of the procedure rooms, and preoperative time. The findings of this analysis would be useful in determining measures that would create improvements to the departments and patient satisfaction.

Methodology

An analysis of this study was done after gathering data from the IR department in the specified period of time. This study successively scrutinized the procedure documents, individual case files and organizational time tables. Descriptive statistics were applied to look for patterns and trends in cancellations, scheduling precision, NPO compliance, procedure room usage, and preoperative wait time. However, qualitative information was also collected from interviews and direct observations with the staff to understand the actual causes of suboptimal process performance.

Key Results

- **High Cancellation Rates:** The cancellation observation rate that was established in the study was a general one and was a 23%. Of these, 39 percent were related to financial clearance and 61 percent related to the factors that include cancellations

made by the doctors, patients health complications or lack of them and cancelations made by the patients.

- **Scheduling Accuracy:** Scheduling of procedures frequently started outside the planned time hence affecting the patient satisfaction as well as effectiveness of their department.
- **NPO Compliance:** Despite the fact that 89% of cases recorded a NPO time, 72% of patients fast for a period more than 6 hours which may lead to discomfort and dissatisfaction.
- **Procedure Room Utilization:** Among the investigated procedures identified as DSA, 48% were reported as most frequently performed, while USG was at 36% and CT at 16%. Therefore, staff resource management is a crucial component to effectively manage the rooms and to ensure that procedures commence on time.
- **Preoperative Wait Times:** Analysis of the compliance with the predefined wait times revealed it was at 67% for the IR Daycare patients and at 55% for the IPD patients which show that there could be an issue with the management of the patients' flow and preparation.

Conclusion

The study identifies key areas needing improvement in the IR department at Medanta Gurgaon. Implementing targeted measures—such as better communication and coordination, more efficient financial clearance processes, improved scheduling, and consistent use of procedural checklists—can greatly enhance both operational efficiency and patient satisfaction. Ongoing quality improvement efforts, staff training, and patient-centered care practices are vital for achieving these objectives. The findings emphasize the importance of a structured, data-driven approach to overcoming operational challenges and enhancing healthcare delivery.

Keywords

Interventional Radiology, Operational Efficiency, Scheduling Accuracy, NPO Compliance, Patient Satisfaction

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I would want to express my sincere gratitude to everyone who has supported and counselled me while I have been working on my dissertation.

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I would also to the extend my appreciation to Mr. Sushil Kumar, Head of the Department of Radiology in Medanta Hospital for having given me an opportunity to work in the Interventional Radiology on this study. Also, my sincere appreciation goes to Miss Doyel Roy for her contribution and support towards the study.

I am also grateful to all the staffs and colleagues of Medanta Hospital who are associated with Interventional Radiology Department for their cooperation during data collection. I could not have completed my research work as easily as I have without their help.

Last but not the least, I would like to thank my friends and family for their encouragement all throughout my education.

Dr Aparna Dubey
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TABLE OF CONTENT

S. No.	Contents	Page No.
1	List of Figures	x
2	Abbreviations	xi
3	About Medanta	1-4
4	Introduction	5-14
5	Review of Literature	15-42
6	Methodology	43-47
7	Results	48-56
8	Discussion	57-59
9	Conclusion	60-63
10	References	64-65

LIST OF FIGURES

Figure No.	Content	Page No.
4.1	Distribution of Cases by Billing Category in the IR Department	49
4.2	Distribution of Cases by Source in the IR Department	50
4.3	Percentage Distribution of Cases across Procedure Rooms in the IR Department	50
4.4	Percentage Distribution of Cases by Procedure Rooms and Patient Source in the IR Department	51
4.5.1	Percentage of Completed vs Cancelled in the IR Department	52
4.5.2	Percentage of Cases Cancelled by Reason in the IR Department	52
4.6	Compliance Checklist Usage in the IR Department	53
4.7	Compliance with Mentioning NPO Time in Patient File in the IR Department	53
4.8	Compliance with Mentioning NPO Time in Patient File in the IR Department	54
4.9	Percentage of IR Daycare Patients Meeting the Pre-Operative Area TAT in the IR Department	55
4.10	Percentage of IPD Patients Meeting the Pre-Operative Area TAT in the IR Department	55

ABBREVIATIONS

IR	Interventional Radiology
DSA	Digital Subtraction Angiography
USG	Ultrasonography
CT	Computed Tomography
MRI	Magnetic Resonance Imaging
NPO	Nil Per Os (nothing by mouth)
OPD	Outpatient Department
IPD	Inpatient Department
TL	Team Leader
ICU	Intensive Care Unit
HDU	High Dependency Unit
TPA	Third Party Administrator
CGHS	Central Government Health Scheme
ECHS	Ex-Service Contributory Health Scheme
OR	Operating Room
TAT	Turnaround Time
RFA	Request for Admission
IV	Intravenous
PPCA	Pre-procedure/Post-procedure Care Area
UK	United Kingdom
NHS	National Health Service
SQUIRE	Standards for Quality Improvement Reporting Excellence
UHP	University Hospitals Plymouth

About Medanta-The Medicity

After seeing the difficulties experienced by Indian patients who could not afford to travel outside for treatment, Dr Naresh Trehan saw the need for an advanced super-specialty medical institution in India. He understood the significance of offering excellent affordable access to modern technology, healthcare, and a blend of modern and traditional Indian medical techniques. Under the visionary leadership of Dr Naresh Trehan and alongside the unwavering commitment to achieving the purpose, this vision became the foundation for Medanta, which is today India's top private hospital.

Vision: Our Institute is governed under the guiding principles of providing affordable medical services to patients.

Mission: Our mission is to provide patients with high-quality, comprehensive, cost-effective healthcare through a dynamic organization that prioritizes the advancement of knowledge and people.

Core values of Medanta:

- **Patient Centric Care:** Encourage an environment in which everyone is dedicated to providing care for patients and their caregivers.
- **Leadership & Quality:** By performing and behaving outstanding, we pledge to deliver excellence in everything we do.
- **Integrity & Courage:** Respect the highest moral standards by prioritizing the patient and possessing the fortitude to act morally.
- **Collaboration, Learning & Innovation:** Foster a culture of teamwork and collaboration, embrace change and creativity, and foster innovation.

Specialties Offered:

☐ Institute of Musculoskeletal Disorders and Orthopaedics

☐ Cancer Institute

- Breast Cancer
- Head and Neck Oncology
- Medical and Haematoma Oncology
- Radiation Oncology

- ☐ Institute of Critical Care and Anaesthesiology
- ☐ Institute of Digestive and Hepatobiliary Sciences
 - Gastroenterology
 - GI Surgery, GI Oncology, and Bariatric Surgery
- ☐ Institute of Chest Surgery-Chest Onco Surgery and Lung Transplantation
- ☐ Heart Hospital
 - Clinical and Preventive Cardiology
 - Cardiac Surgery
 - Electrophysiology and Pacing
 - Interventional Cardiology
- ☐ Kidney and Urology Institute
 - Nephrology
 - Urology and Andrology
- ☐ Institute of Liver Transplantation and Regenerative Medicine
- ☐ Institute of Neurosciences
- ☐ Ayurvedic Medicine
- ☐ Clinical Immunology and Rheumatology
- ☐ Dental Sciences
- ☐ Dermatology
- ☐ Emergency and Trauma Care
- ☐ Endocrinology and Diabetology
- ☐ Gynaecology and Gynae Oncology
- ☐ Internal Medicine
- ☐ ENT, Head & Neck Surgery Hospital
- ☐ Laboratory Medicine
 - Pathology and Blood Bank
- ☐ Ophthalmology

- ☐ Paediatrics
- ☐ Peripheral Vascular and Endovascular Sciences
- ☐ Radiology and Imaging
- ☐ Respiratory and Sleep Medicine
- ☐ Plastic, Aesthetic and Reconstructive Surgery

Facilities and Services offered:

- Emergency & Trauma Care
- Critical Care Units
- Lab Tests & Diagnostics
- Wards & Rooms
- eCLINIC-Telemedicine Services
- Day Care
- Home Sample Collection
- Patient Support Services
- Homecare Services
- Medicine Delivery

Medanta Mediclinic

Out-patient clinic network, Medanta Mediclinic was founded by the Gurgaon, Indian based known multispecialty hospital Medanta. : these are clinics that have been established in such a way that different people can be attended to by professionals accordingly. Medanta Clinics is awash with best medical procedures, staffs and medical facilities; it avails medical practitioners as well as implementing usual medical procedures. These health care institutions provide numerous medical services in many concentrations that include neurological disorders, pulmonary diseases, gastrointestinal conditions, orthopedic ailments, cardiac diseases, and endocrine disorders. These clinics offer general diagnose, treatment, and advice concerning many diseases and illnesses. The Mediclinics are intended for the patient-client who may need close medical attention but is not necessarily contagious, acute or in a critical stage requiring hospitalization. They are also suitable for providing comfort and familiar environment to patients for examinations, consultation, diagnosis, and minor surgeries.

Units	Overview
Medanta –The Medicity, Gurugram	Flagship facility of Medanta - Established in 2009 1,391 installed beds 271 ICU beds
Medanta Hospital, Lucknow	- Established in 2019 475 installed beds 130 ICU beds
Medanta Abdur Razzaque Ansari Memorial Weavers’ Hospital, Ranchi	- Commenced Operations under “Medanta” brand in 2015 200 installed beds 54 ICU beds
Medanta Super Speciality Hospital, Indore	- Commenced Operations under “Medanta” brand in 2014 175 installed beds 53 ICU beds
Jai Prabha Medanta Super Specialty Hospital, Patna	- Launched in 2020 330 operational beds including 57 ICU beds
Medanta Hospital, Noida	- Commencement in FY25 300 expected installed bed

CHAPTER 1:

INTRODUCTION

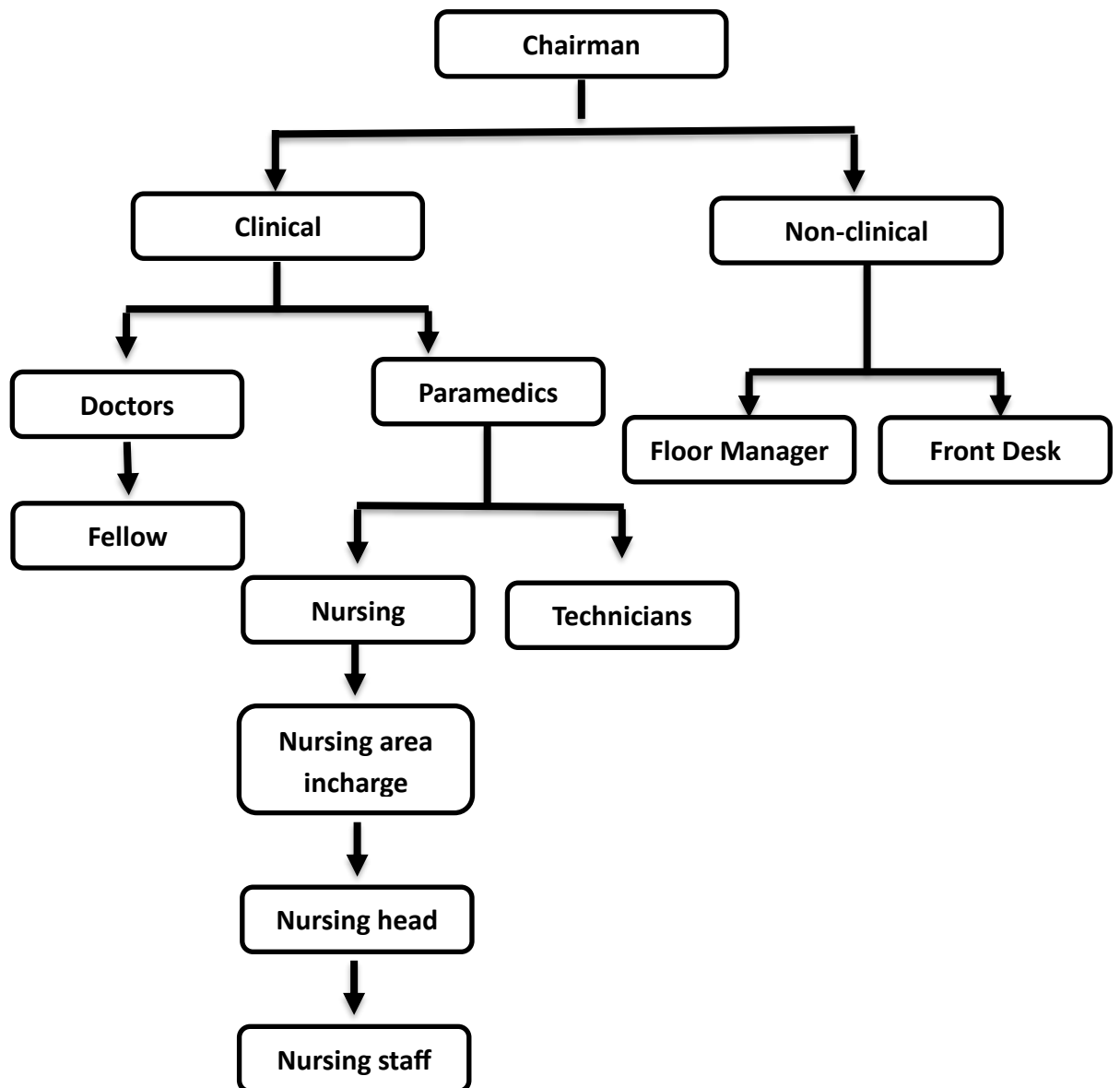
Interventional radiology is a subspecialty of radiology that focuses on the image guided diagnosis and others of many diseases. It can be described as less invasive approach of doing some procedures or delivering some treatments and then the medical imaging is used as a guide. Organs/tissues are visualized via CT scans, ultrasound, MRI, and fluoroscopy and X-rays by Interventional radiologists. This reduces the effect on the other surrounding healthy tissues and also allows them to determine the area of therapy accurately.

The Interventional Radiology department at Medanta has been on the forefront of minimally invasive treatments for more than a decade. Our patients receive comprehensive, interdisciplinary care from a team of committed Interventional Radiologists in an integrated healthcare centre. Our group of medical professionals, nurses, technicians, and other specialists in radiology work together to guarantee unmatched quality in patient treatment, instruction, and research.

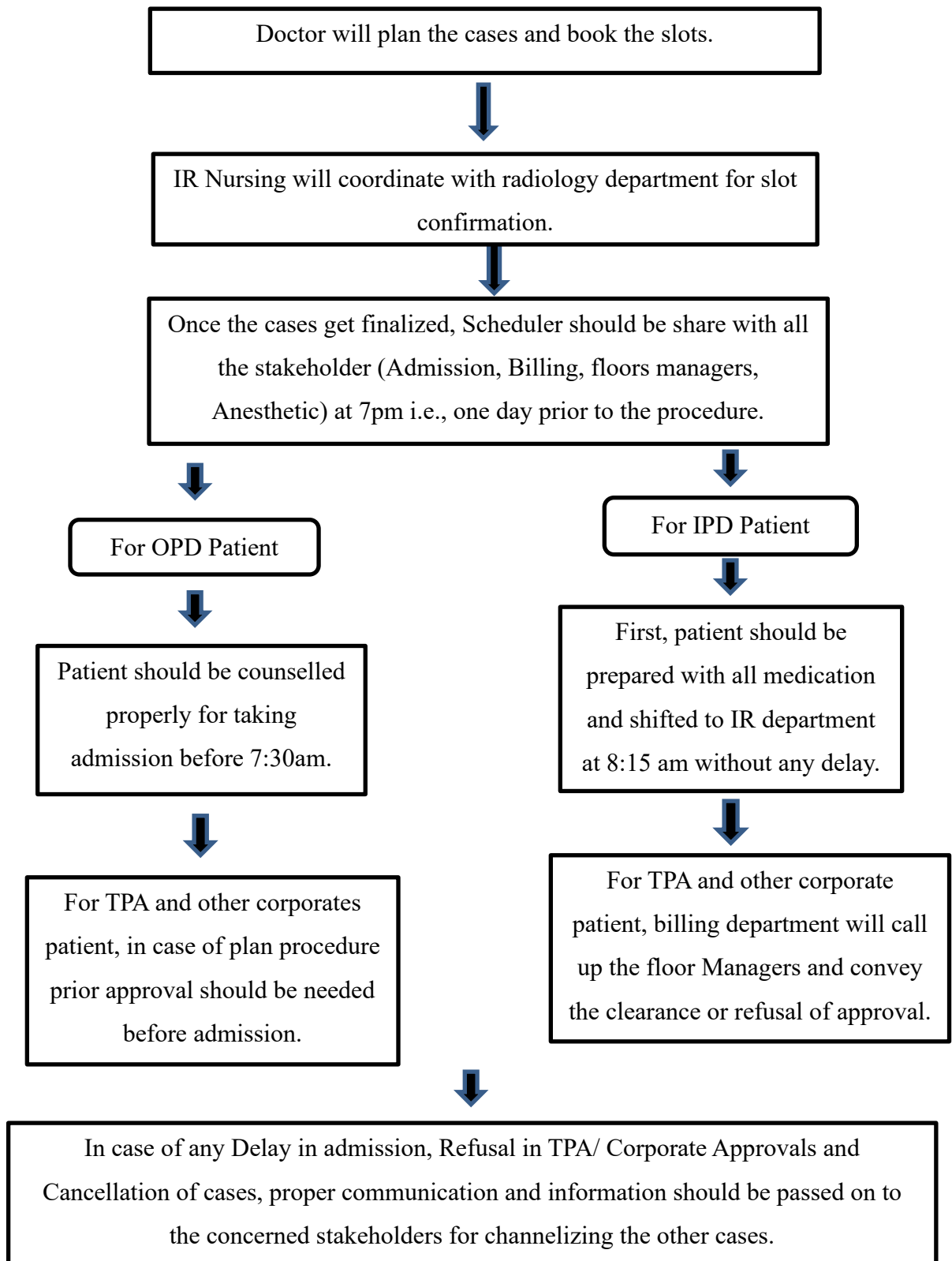
From screening and diagnosis to treatment planning and monitoring response to treatment, Interventional radiology department is well-equipped in delivering effective, personalized medical care. Interventional Radiology is specialized area where our skilled radiologists perform Image guided minimally invasive therapies, virtually all body parts and organ systems.

We describe ideal quality as providing fair access to healthcare, exceptional patient safety, timely care delivery, and better care and outcomes. We make this possible with our consistent efforts to provide compassionate, state of the art, proficient care to patients at an affordable cost.

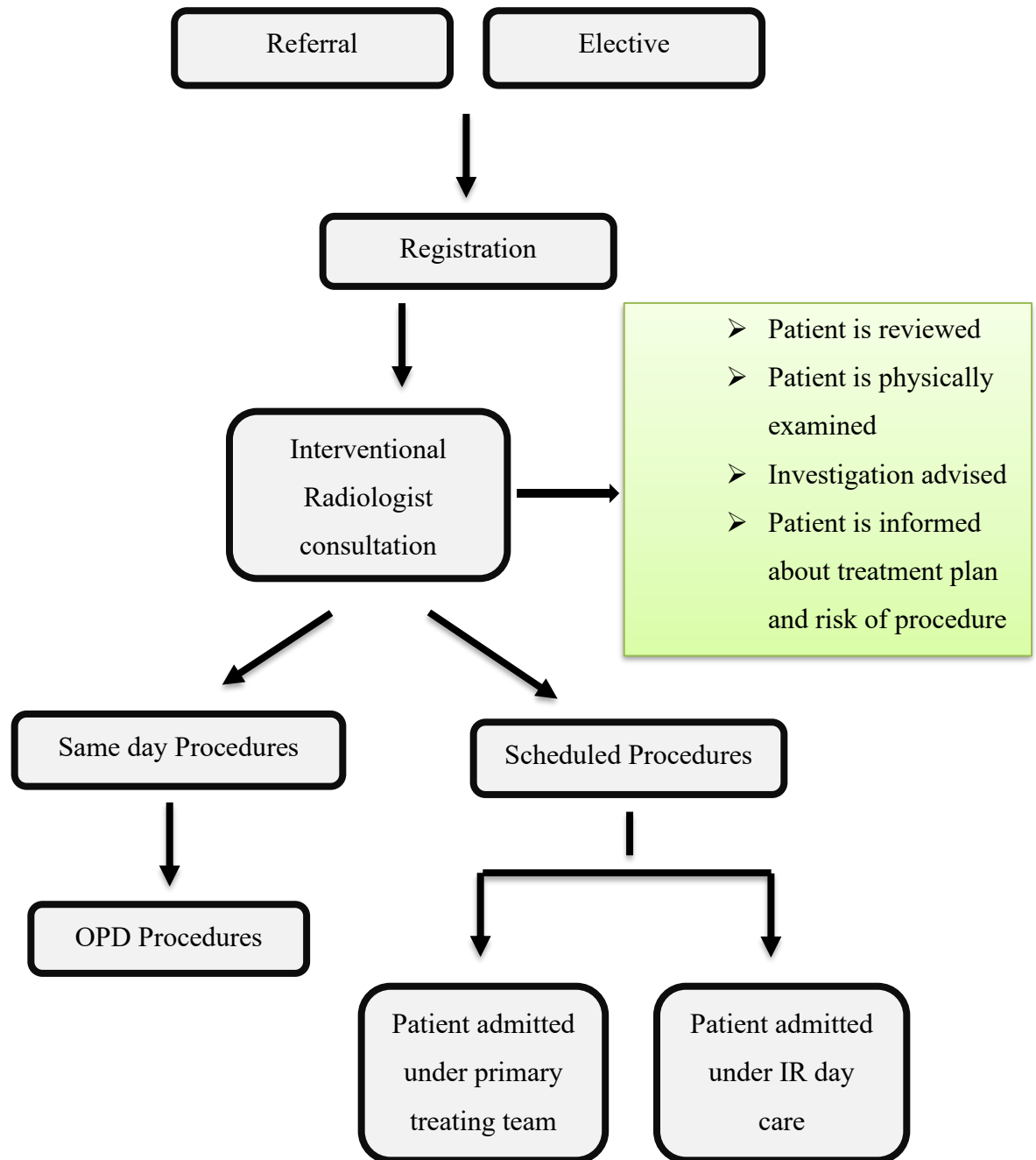
Departmental Organogram



Process Flow



OPD flow of Interventional Radiology



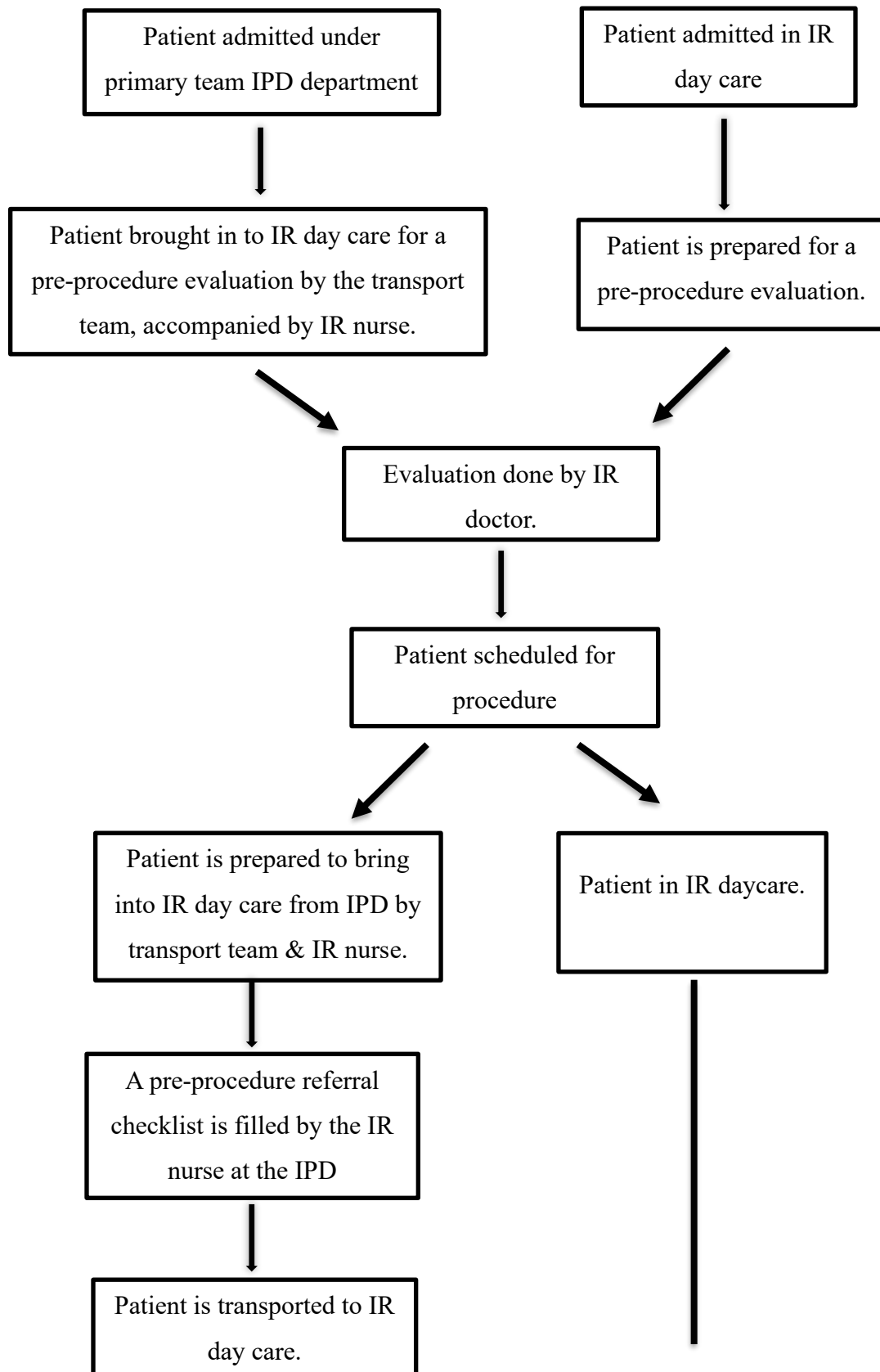
- Long-stay patients
- ICU required
- High risk of post-op complication
- Post IR follow-up required with primary team.
- **RFA provided by treating team**

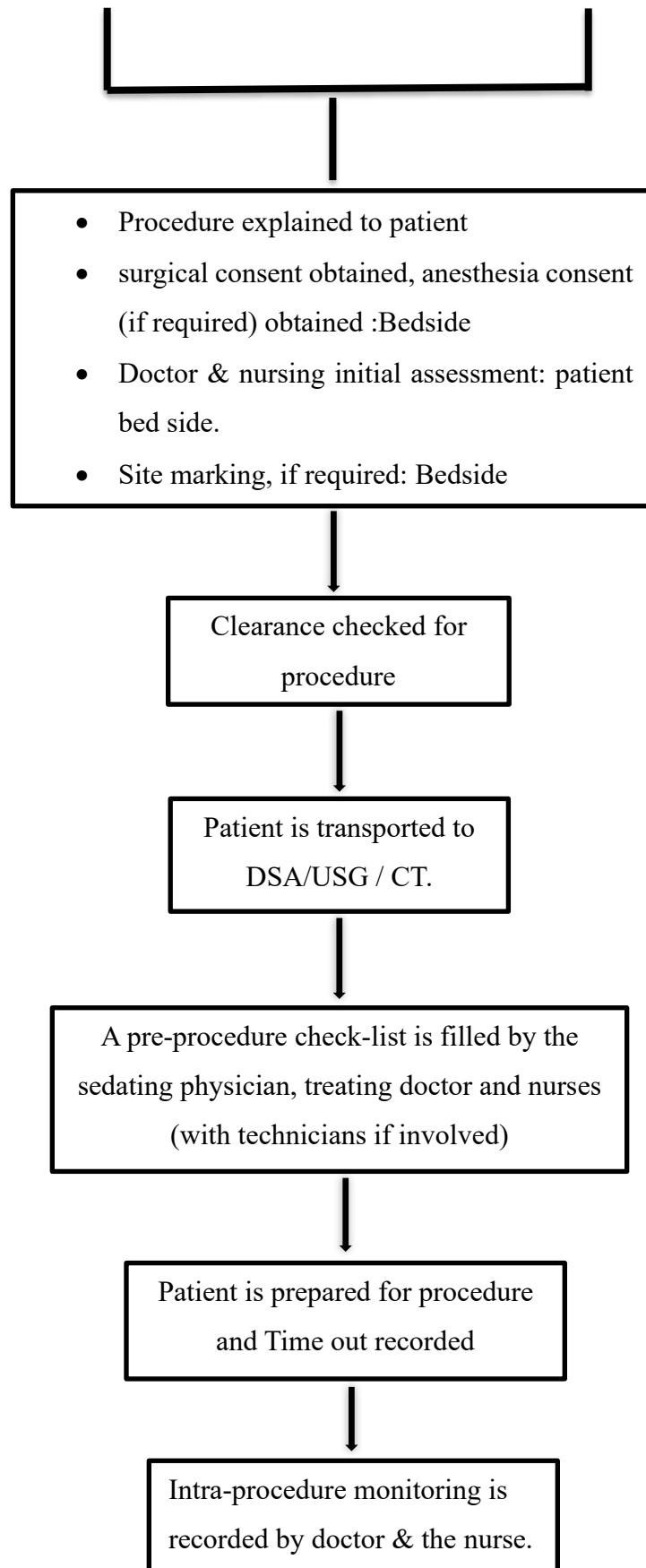
- Short procedures
- Relatively low risk of complication
- Procedures under local anesthesia
- Only 2-4hrs of post-op monitoring required.
- **RFA provided by IR department**

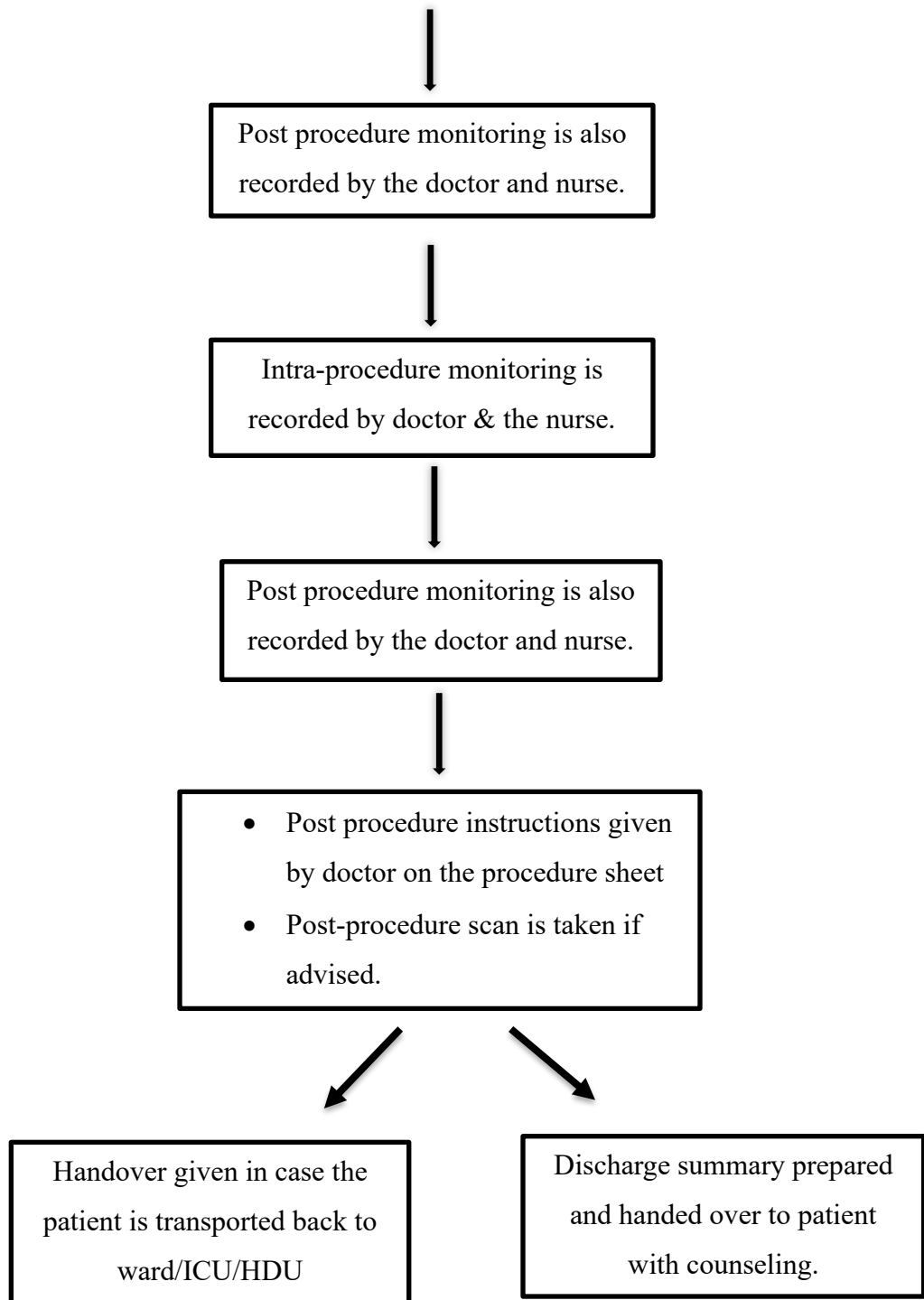
Patient informed about pre-requisites

Admission process complete

Process flow of Interventional Radiology procedures







1.1 Research problem:

How can operational efficiency and patient satisfaction be improved in the Interventional Radiology Department at Medanta Gurgaon?

1.2 Objectives:

1. To assess the current scheduling processes for procedures in the IR department.
2. To evaluate the financial clearance process for procedures.
3. To analyse the utilization of checklists for procedures.
4. To ensure patients' NPO status is maintained as required for procedures.
5. To identify areas for improvement and propose actionable recommendations to enhance operational efficiency and patient satisfaction.

1.3 Aim:

This study aims to analyse, assess, and improve operational efficiency and patient satisfaction within the IR department. The focus will be on four key parameters:

1. Scheduling of cases for procedures
2. Financial clearance of procedures
3. Utilization of checklists, and
4. Ensuring patients' NPO status is maintained as required.

The results are expected to enhance workflow processes, reduce patient waiting times, and improve overall patient care quality.

CHAPTER 2:

REVIEW OF LITERATURE

S. No.	Authors (Years)	Study Location	Sample Size	Sampling Techniques	Salient Features
1	Monica Villarreal, Bradley Rostad, Richard Wright, and Kimberly Applegate (2015)	Emory University Hospital, Atlanta, Georgia	457	Total Population	• The goal of the study was to shorten the time it takes for procedures to begin in the IR divisions of the Department of Radiology, especially for the first cases of the day. • To solve the delays in the IR procedure, an interdisciplinary team consisting of managers, data analysts, and healthcare professionals was formed. • Six rooms' worth of data were gathered using a standardized form to monitor patient progress through the

					PPCA and IR workflow, allowing for the identification of major trouble spots. • Based on the data gathered, improvement initiatives were put into place, which resulted in a notable rise in the number of scheduled outpatients and on-time starts for the first case of the day. • The study found that patients waited less time to enter the treatment room when they were ready for the procedure, and there were less delays in patient care overall and per 100 patients.
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					The most common causes of delays were waiting for laboratory results and permission, indicating areas in need of focused improvement measures to boost productivity and patient satisfaction.
2	Luke Martin and John Langell (2017)	Specialty Care Center of Innovation, George E. Wahlen Department of Veterans Affairs Medical Center, Salt Lake City, Utah	960	Retrospective	- The purpose of the study was to determine how often first surgical starts at Veterans Affairs Medical Centres would occur on time if a pre-OR timeout and performance pay incentive were implemented. - Data was collected on all first-start cases

					from 2008 to 2015, showing significant improvements in on-time starts, delays of <15 min, and delays of 16 to 30 min over the study period. • Only 15% of cases started on time prior to the timeout and pay incentive being implemented; by 2015, however, over 72% of cases started on time, demonstrating a significant improvement ($P < 0.001$). • The total OR time saved from these measures was estimated to be 37,556 minutes, resulting in gross savings
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					of 751, 120 based on an estimated cost of 751, 120 based on an estimated cost of 20 per minute. • The study highlighted the importance of efficient OR utilization in reducing unnecessary costs and improving overall performance in surgical settings.
3	Sadhna Nandwana, Gail Walls, Susan Reich (2021)	Emory University, Atlanta, United States of America	43	Total Population	• The study aimed to boost CT procedure on-time starts from 11% to more than 50% in 20 weeks by examining factors causing delays and implementing

					standardized processes. • Important stakeholders came together to form a team and set targets for quality improvement, conduct a current state analysis, and develop tests of change to address delays in patient arrival and throughput. • The development of 14 tests of change, including standardized process maps and role assignments for the procedural team, resulted from the root cause analysis, which revealed a number of
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					problems, including environment, people, processes, and materials challenges that were contributing to delays. • The mean time to answer questions (TAT) decreased from 71.5 to 21 minutes after new procedures were put in place for 20 weeks. During the control period, the TAT further improved to 15.9 minutes. After adjusting for anomalies such as patient tardiness and challenging IV access, on-time starts increased from 11% to
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					60% and ultimately reached 82%. • Changes like setting fixed patient arrival times, ensuring access to necessary testing devices, and improving coordination among procedural staff were implemented to mitigate delays and standardize processes, leading to increased efficiency and reduced patient wait times.
4	Franklin Dexter, Richard H. Epstein, Donald H. Penning (2020)	University of Iowa, United States of America	331	Cohort	• The kind of research design used in the research paper was historical cohort design where all record from the studied

					suite was used without sampling. This approach made it possible to avoid having a sampling bias in the analysis of the data collected since all the offered cases were analyzed. • Prior research established that 9 months could be a sufficient period of data collection, as it sufficed to identify first-case starts differences, and therefore, the sample size in the given study was sufficient to make the conclusion. • To ensure statistical credibility of the
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					findings of the study based on the information that is being presented, the analysis also involved computation of confidence intervals to determine significant differences that are economically meaningful in the remaining minutes of the late concluded cases. • The research sought to make significant inferences about the effect of first-case tardiness on over-utilized time in endoscopy suites with particular characteristics,
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					such as interchangeable rooms and typical workloads, by analysing all days of data available instead of a sample.
5	Seunggu Han, John Rolston, Corinna Zygourakis, Matthew Sun, Michael Mcdermott, Catherine Lau, and Manish Aghi (2015)	University of California, San Francisco	1271	Total Population	• The initiative aimed to complete all neurosurgical first-start cases with proper surgical consents and accurate surgical site markings thirty minutes before the scheduled start time. • The average delay for all first-case starts was reduced from 9.67 minutes prior to the intervention to 7.17 minutes throughout the

					endeavour. This resulted in a 52 hours and 57 minute reduction in delays overall across 1271 cases. • The percentage of neurosurgical cases that started on time improved significantly; in 97% of cases, surgical consents and site marking were finished 30 minutes ahead of schedule. • By significantly reducing delays in first-case starts, the neurosurgical trainee-led project demonstrated the value of involving physician trainees in
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					quality improvement initiatives aimed at improving operating room efficiency. The medical center has seen improvements in a number of quality measures over the years as a result of physicians being successfully engaged to lead innovative quality improvement initiatives and resident-led quality improvement programs.
6	Patrick Ng, Mark Zaki, Chris Collier, Faith Robertson, Blake Hauser,	Massachusetts General Hospital, United States of America	1063	Total Population	First-case delays in neurosurgery are often indicators of OR effectiveness, which affects healthcare

	Scott Farren, Maya Babu, James Rhee, Wilton Levine, and Oluwaseun Akeju (2022)				spending and delivery. • A multidisciplinary effort comprising quantitative timestamp analysis, OR cost estimation, direct process mapping, and qualitative analysis examined neurosurgical first-case delays at a major university medical centre. • The study identified 27% of neurosurgical first-cases as delayed, with a median delay of 25 minutes and total delay of 9432 minutes over one year. • Factors contributing to
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					delayed first-cases included late patient arrival to the hospital and patient preparation issues, with venous and arterial lines being common causes of delays. • Direct process mapping revealed system-level inefficiencies like limited elevator access and patient bottlenecks, highlighting the need for patient-centric system designs and workflow evaluations. • Qualitative analysis pinpointed patient preparation as a
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					significant cause of delays, emphasizing the importance of streamlining processes like vascular access to reduce delays. • The study underscores the importance of a multimodal approach combining objective data analysis, direct observation, and qualitative assessment to identify and address perioperative inefficiencies in neurosurgical first-case delays.
7	Franklin Dexter, Richard H. Epstein, Eric Marcon,	United States of America	15	Total Population	• The study focused on analysing operating room data to calculate the percentage of prolonged

	Johannes Ledolter (2005)				turnover times and delays during specific hours of the day. • To ensure statistical accuracy at the two hospitals studied, adjustments were made for multiple comparisons using confidence intervals • The study successfully created a statistical technique that enables managers to focus quality improvement initiatives by estimating the percentage of longer turnover times that occur at particular periods of the day.
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					• Rather than only examining the percentage of protracted turnovers at each hour, the diurnal pattern of prolonged turnovers offered insightful management information. • Throughout the study, it was observed that in both hospitals, the percentage of extended turnover times gradually increased during the course of the workday, reaching its highest point during the hour starting at 1 PM. • The middle of the workday was when the majority of
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					turnovers occurred, thus that's when the percentage of protracted turnovers that happened at designated hours peaked. • The research used 4-week periods to calculate the number of prolonged turnovers, combining services to ensure statistical robustness and practicality in implementing management interventions.
8	Valerie Amanda White (2018)	Central Arkansas Veterans Healthcare System, United States of America	400	Retrospective	• Common causes of procedure start delays in IR are discussed, including unprepared patients, physician

					unavailability, and delays stemming from first-case delays. • Pre-procedural checklists and physician start-time reminders were implemented, and this resulted in a notable increase in patient satisfaction and on-time beginnings. In order to evaluate the effect of the checklist and reminders on workflow efficiency, the project comprised a pre-implementation and post-implementation retrospective chart review in an IR
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					department that processed 400 cases on average per month. Strategies like a team approach, task assignment to staff members, and improved perioperative communication were utilized to expedite patient readiness and enhance collaboration between multidisciplinary teams for better workflow efficiency.
9	Saisunder Shashank Chaganty, Himanshu Sharma (2019)	Plymouth, United Kingdom	461	Prospective	Through a prospective audit carried out over a six-month period, the study paper focuses on finding and assessing perioperative delays in the

					neurosurgery theatres at a local institution. • It highlights that 90% of cases experienced late starts, with an average delay of 49 minutes and 21 seconds, and 32% of cases finished early. • The study found a 16.8% cancellation rate and a 76% theatre utilization rate, with lack of patient readiness being the most common cause for late starts (62.1%). • During the study period, the total cost of late start delays was estimated to be £304,266.18. • The authors emphasize the
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					importance of improving theatre efficiency to optimize healthcare delivery and reduce costs, especially in financially strained healthcare systems like the NHS. • By implementing strategies to enhance compliance with day-case guidelines for lumbar spinal surgery, the research aims to mitigate delays and improve long-term sustainability in Neurosurgery theatres. • The study's methodology
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					involved a prospective observational approach following SQUIRE guidelines, with data collected from the UHP Neurosurgery Department in the UK.
10	Ari Isaacson, Natalie Ridge, Hyeon Yu, Marianne Jackson (2014)	United States of America	1008	Retrospective	• The research focuses on implementing a "Lean" system improvement in interventional radiology to enhance first-case efficiency and reduce overtime costs. • The study aims to examine the impact of process optimization strategies on improving workflow efficiency and

					decreasing excess expenditures in healthcare. • The primary objectives include streamlining operations, reducing delays, and enhancing overall productivity within the interventional radiology department. • Key features involve analyzing current workflows, identifying bottlenecks, and implementing tailored solutions to enhance operational efficiency. • The research highlights the
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					importance of utilizing Lean principles such as value stream mapping, process standardization, and continuous improvement to drive organizational performance. • It focuses on quantifiable objectives and measurement, which means that it follows the work achieved and analyzed by key performance indicators in order to detect the further improvement directions. • This paper emphasizes the need for multi-professional approach in
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					implementation of improvements among healthcare providers, managers and employees for optimal outcomes and long term system modifications. • Some of the elements are improving communication with patients, emphasizing the need to implement and sustain quality improvement, and active employee participation. • These are as follows: The research aims at optimizing the approach to ensure the repeated
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					appraisal of the applied strategies to maintain efficiency and lower costs in the long-run.
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CHAPTER 3: METHODOLOGY

3.1 Introduction:

This chapter explains and describes the research method that would be utilized in this study concerning the enhancement of the ER, improving effectiveness in the Interventional Radiology Department and patient satisfaction in Medanta Gurgaon. Some of the headings include; Research Questions, Research Methodology, Study Context, Study Participants, Methods/Approach, Sampling Technique, Measurement Instrument, Definitions/Operationalization, Analytical Techniques/Approach, Qualitative Methods/Techniques, and Ethical Considerations.

3.2 Key Research Questions:

The study seeks to answer the following key research questions:

- How can operational efficiency be improved in the Interventional Radiology Department?
- How can patient satisfaction be enhanced in the Interventional Radiology Department?

3.3 Research Design:

The study employs an observational cross-sectional research design. This design is appropriate for systematically observing and recording operational and patient satisfaction metrics without manipulating any variables.

3.4 Study Setting:

The research will be conducted in the IR Department at Medanta Gurgaon, a leading healthcare facility known for its advanced medical treatments and patient care.

3.5 Study Population:

- **Inclusion Criteria:** All scheduled patients undergoing procedures in the IR department during the study period.
- **Exclusion Criteria:** Unscheduled patients.

3.6 Study Duration:

The study will be conducted over 25 days, from April 5, 2024, to April 30, 2024.

3.7 Sample Size:

The sample size for this study will be 102 scheduled patients, representing the total population of scheduled patients during the study period.

3.8 Sampling Technique:

Total population sampling will be used, including all scheduled patients who meet the inclusion criteria.

3.9 Research Procedures/Approaches:

Quantitative Assessment:

- **Data Collection Tools:** Microsoft Excel will be used for data collection and analysis.
- **Data Collection Procedure:**
 - Record data on patient scheduling, financial clearance status, checklist utilization, and NPO status duration using Excel spreadsheets.
 - Observe and document the workflow processes in the IR department.
 - Ensure accurate recording of how long patients are NPO before procedures, particularly focusing on instances where the NPO status exceeds the required 6 hours.
 - Track the number of scheduled procedures that were cancelled due to lack of financial clearance.

3.10 Operational Definitions:

1. Operational Efficiency:

- **Turnaround Time:** The total time from when a patient enters the IR until the procedure is completed. Measured in minutes or hours.
- **Scheduling Accuracy:** The percentage of procedures that start within 30 minutes of their scheduled time.
- **Procedure Cancellation Rate:** The percentage of scheduled procedures that are cancelled due to lack of financial clearance.

2. Patient Satisfaction:

- **Indirect Assessment:** Evaluated based on operational metrics like scheduling accuracy, turnaround time, and procedural preparedness (NPO status adherence).

3. Checklist Utilization:

- **Compliance Rate:** The percentage of checklists accurately followed and documented as required.

4. NPO Status:

- **NPO Duration:** The total time a patient is NPO before their procedure. Measured in hours, with a specific focus on instances where NPO exceeds the required 6 hours.
- **Extended NPO Rate:** The percentage of patients who are NPO for more than 6 hours before their procedures.

5. Workflow Processes:

- **Process Bottlenecks:** Identified points in the workflow where delays frequently occur, measured by the frequency and duration of delays.

3.11 Data Analysis Plan:

Software: Microsoft Excel will be used for data analysis.

Descriptive Statistics:

1. Demographic Data: Summarize the distribution of cases based on:

- Billing category (Cash, CGHS, ECHS)
- Source of patient admission (IPD, IR Daycare, OPD)

2. Procedure Room Distribution: Calculate the percentage of cases performed in each procedure room (CT, DSA, and USG).

3. Procedure Completion Rates: Calculate the percentage of procedures that were completed versus cancelled.

4. Checklist Compliance: Calculate the percentage of cases with and without checklists.

5. NPO Status: Summarize the duration of NPO status in hours and categorize into predefined ranges (≤ 9 hours, 9-12 hours, 12-15 hours, >15 hours).

6. TAT Analysis:

- Calculate the percentage of IR Daycare patients who waited within and beyond the predefined TAT of 2 hours in the pre-operative area.
- Calculate the percentage of IPD patients who waited within and beyond the predefined TAT of 30 minutes in the pre-operative area.

3.12 Ethical Considerations:

- **Confidentiality:** Anonymize all collected data, removing any personal identifiers. Securely store all data on password-protected devices and restrict access to authorized personnel only.
- **Non-Interference:** Ensure the observational study does not interfere with patient care or the normal operations of the IR department.
- **Ethics Committee Approval:** Obtain approval from the Medanta Gurgaon ethics committee, detailing the study's purpose, methods, and confidentiality measures.
- **Transparency and Accountability:** Clearly communicate the study's purpose and procedures to IR department staff and involve them in the data collection process to ensure transparency and collaboration. Maintain a record of all observations and data collection activities, ensuring accuracy and accountability.
- **Data Security:** Implement robust data security measures, including encryption of electronic data and secure storage of any physical records. Ensure that any publication or presentation of the study results does not include identifiable patient information.

CHAPTER 4:

RESULTS

4.1 Distribution of Cases by Billing Category

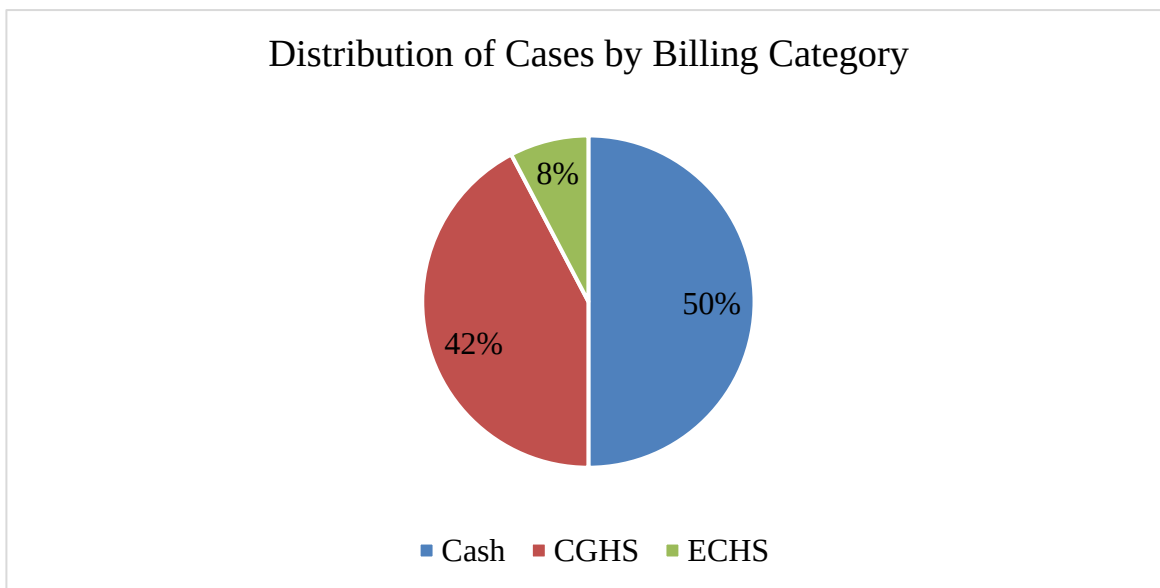


Fig. 4.1 Distribution of Cases by Billing Category in the IR Department

An analysis of the figure 4.1 for patients undergoing procedures in the IR department revealed that cash payments were the most frequent, accounting for 50% of cases. This was followed by CGHS at 42% and ECHS at 8%. This distribution highlights the diverse range of patients accessing services within the IR department, with a significant portion relying on out-of-pocket payments.

4.2 Distribution of Cases by Patient Source

Figure 4.2 indicated that IPD admissions constituted the majority of cases at 60%. IR Daycare cases followed at 34%, and OPD cases were the least frequent at 5%. This distribution suggests that the IR department primarily caters to patients already admitted within the hospital, with a notable proportion also utilizing IR services on a daycare basis.

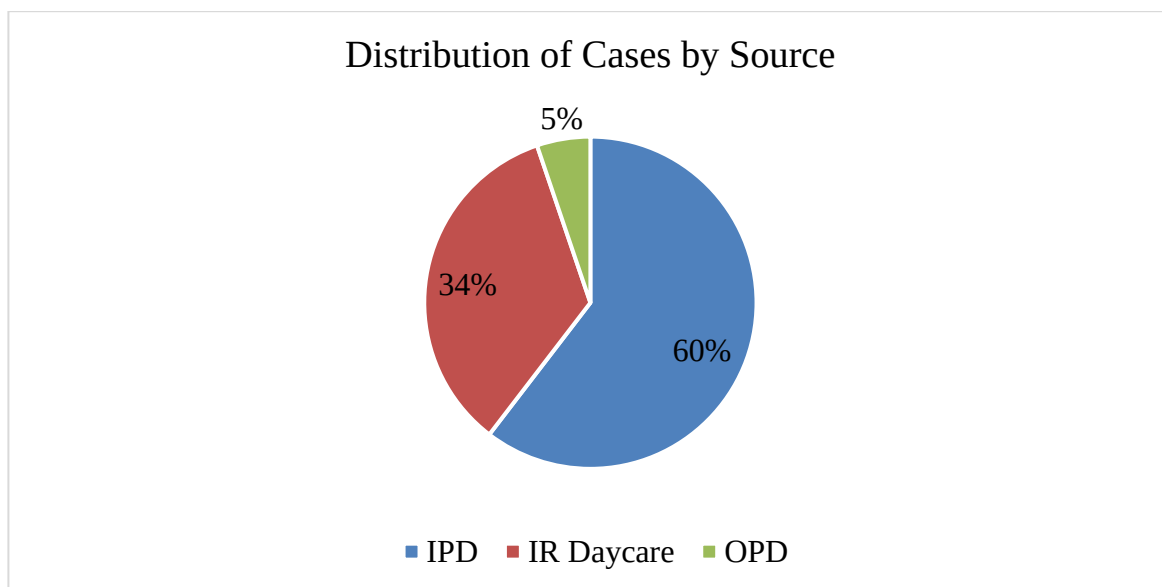


Fig. 4.2 Distribution of Cases by Source in the IR Department

4.3 Procedure Room Distribution

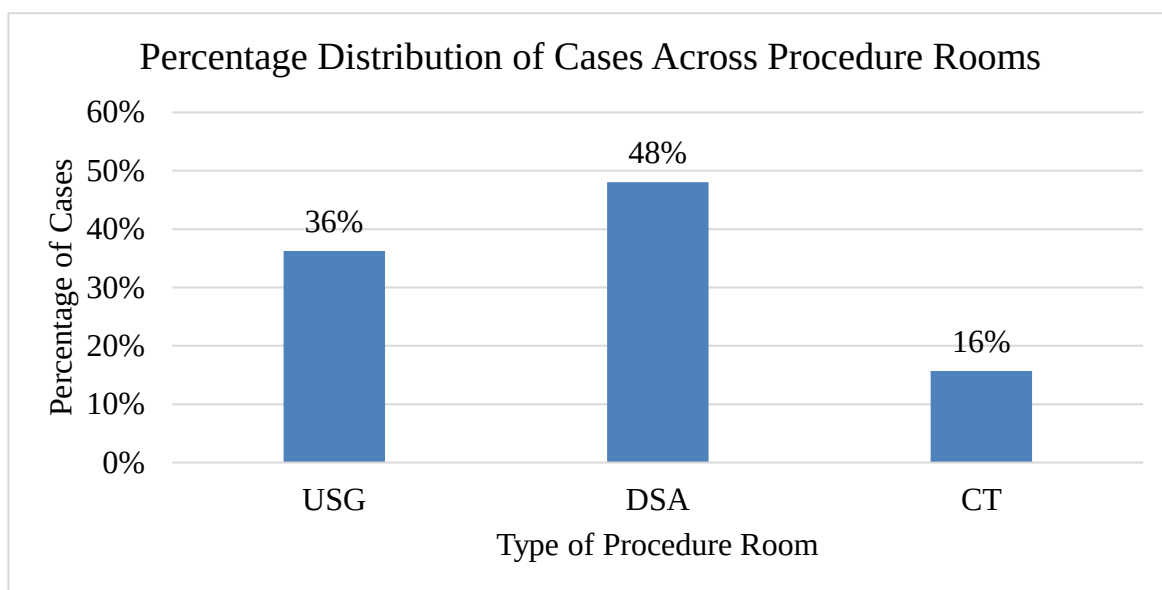


Fig. 4.3 Percentage Distribution of Cases across Procedure Rooms in the IR Department

Figure 4.3 showed that DSA procedures were the most commonly performed, accounting for 48% of all cases. USG procedures followed at 36%, and CT procedures were the least frequent at 16%. This distribution reflects the varying functionalities of the different procedure rooms within the IR department

4.4 Utilization Patterns of Procedure Rooms by Patient Source

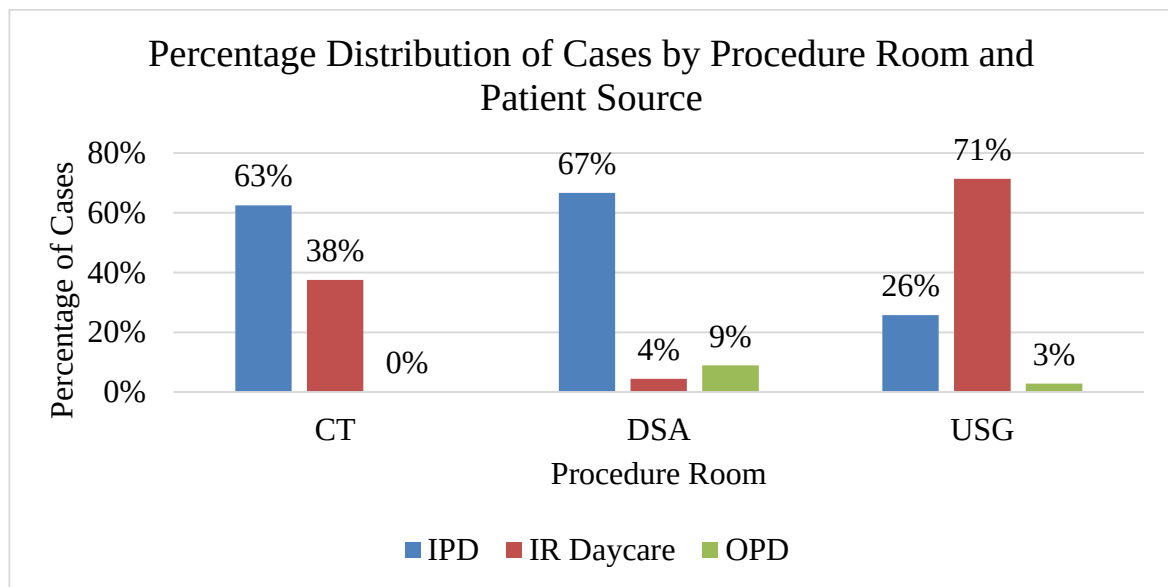


Fig. 4.4 Percentage Distribution of Cases by Procedure Rooms and Patient Source in the IR Department

Figure 4.4 revealed distinct utilization patterns for each procedure room based on patient source. For CT procedures, the majority (63%) originated from IPD, followed by IR Daycare (38%). USG procedures primarily involved IR Daycare patients (71%), with a smaller proportion from IPD (26%) and OPD (3%). DSA procedures were unevenly distributed across IPD (76%), IR Daycare (14%), and OPD (9%). These findings highlight the specific patient populations catered to by each procedure room within the IR department.

4.5 Procedure Completion Rates and Reason for Cancellation

The analysis of figure 4.5.1 and 4.5.2 indicated that 77% of procedures were successfully completed, while 23% were cancelled. Among cancelled procedures, 39% were attributed to financial clearance issues. The remaining 61% of cancellations were due to various other reasons, including cancellations by doctors, patient's medical condition, or patient non-attendance. Understanding these reasons is crucial for developing strategies to reduce cancellation rates and improve departmental efficiency.

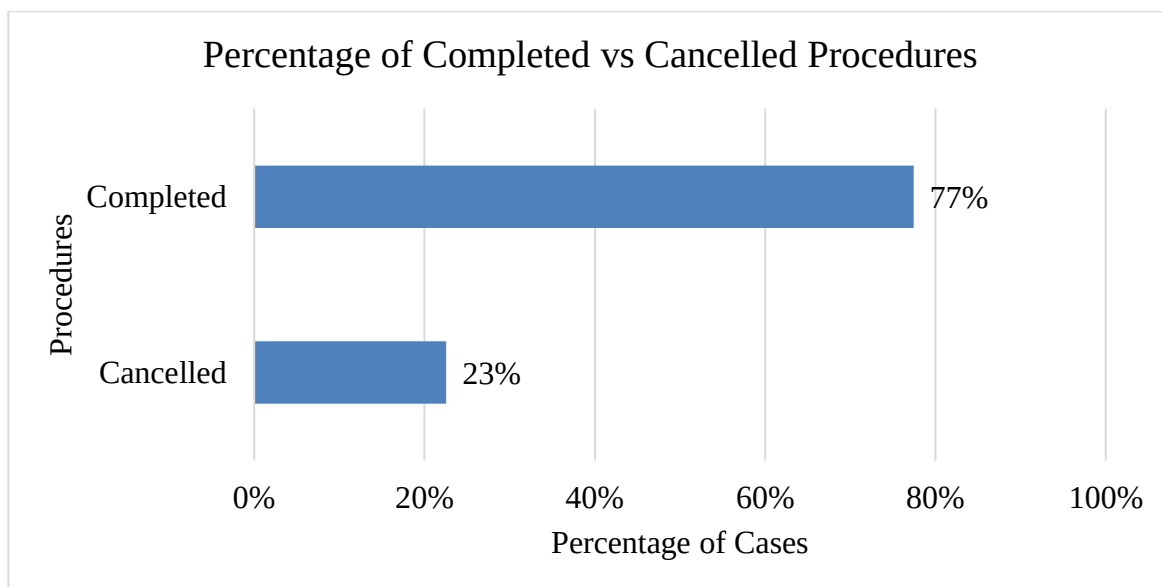


Fig. 4.5.1 Percentage of Completed vs Cancelled in the IR Department

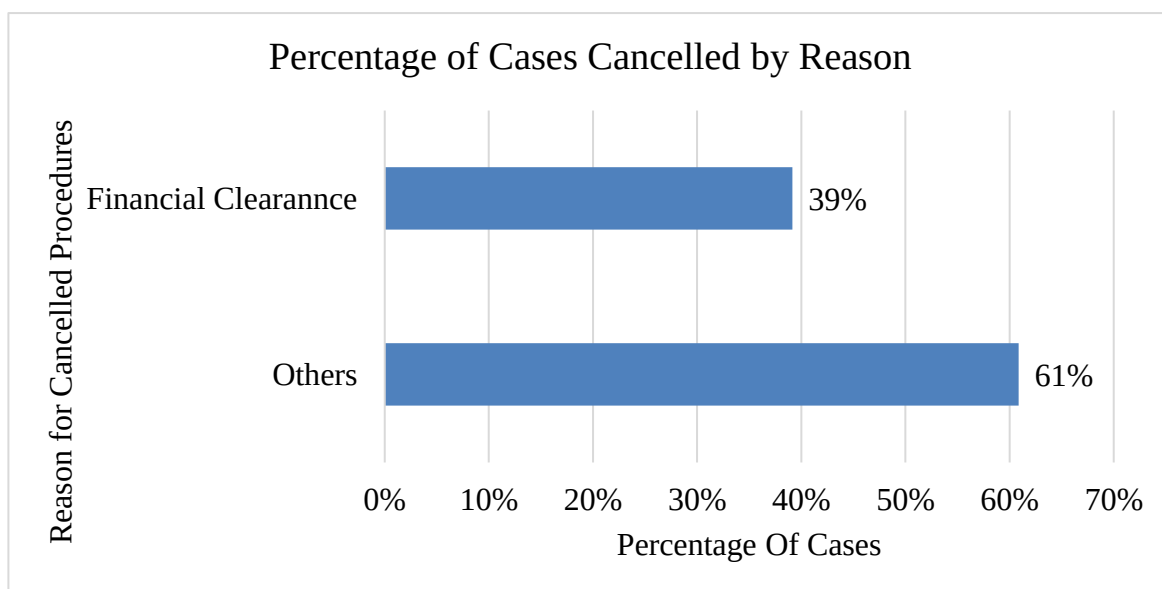


Fig. 4.5.2 Percentage of Cases Cancelled by Reason in the IR Department

4.6 Checklist Compliance

Figure 4.6 revealed variability in documentation practices. In 40% of cases, checklists were documented as present, while in 60% of cases, their presence was not documented. This underscores the importance of emphasizing consistent adherence to procedural checklists to ensure standardized practices and enhance patient safety during interventions.

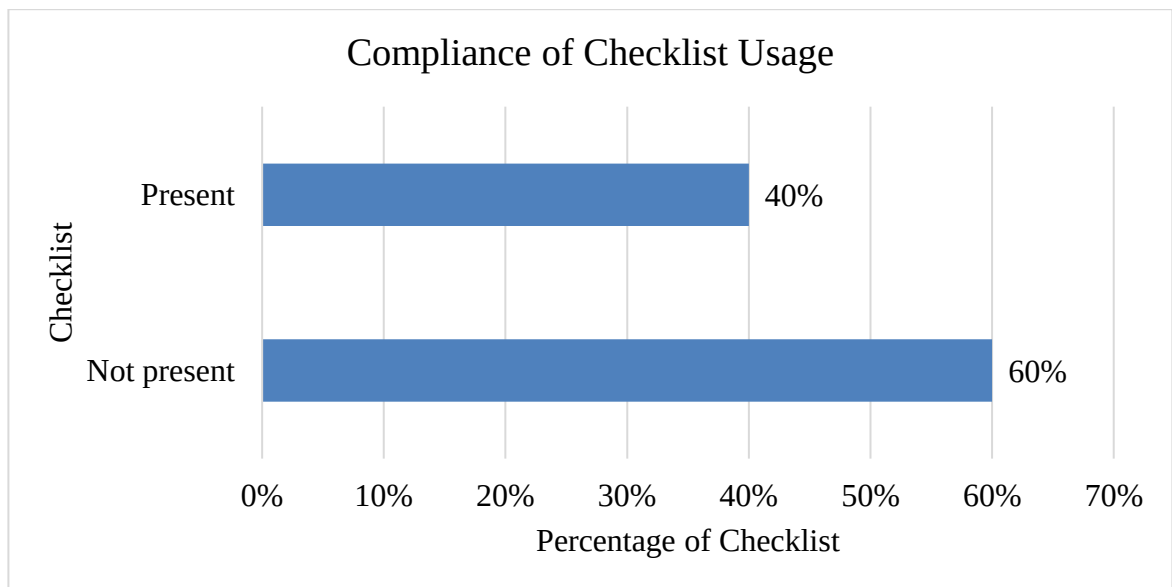


Fig. 4.6 Compliance of Checklist Usage in the IR Department

4.7 Compliance with Mentioning NPO Time on Patient Files

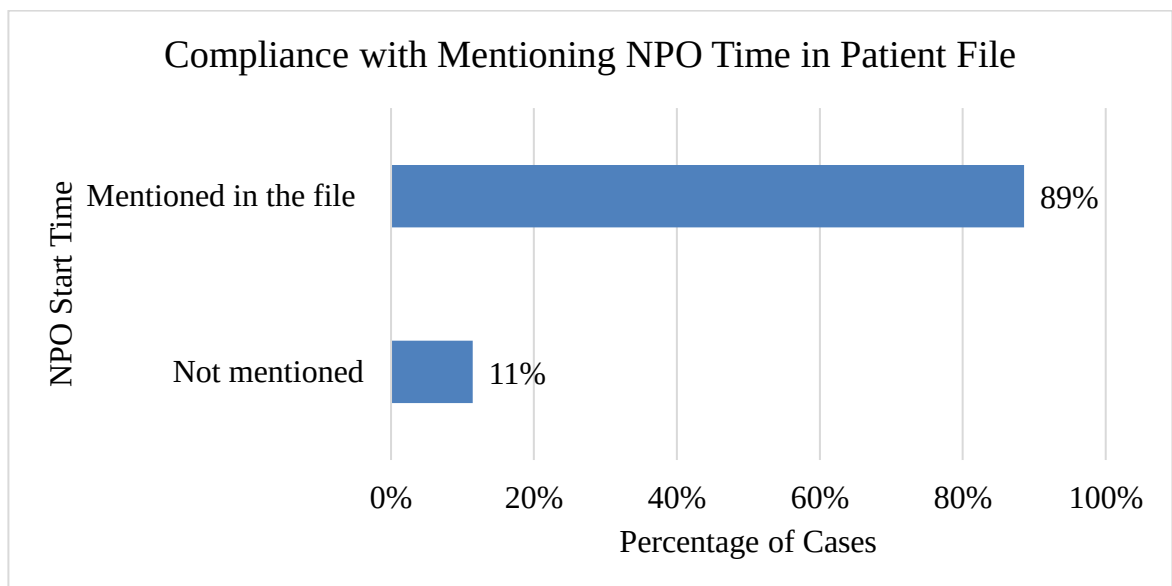


Fig. 4.7 Compliance with Mentioning NPO Time in Patient File in the IR Department

The analysis figure 4.7 indicated a high level of compliance. In 89% of cases, the NPO time was documented, while in 11% of cases, it was not. This suggests a positive practice in recording NPO instructions, essential for proper patient preparation before procedures.

4.8 NPO Status

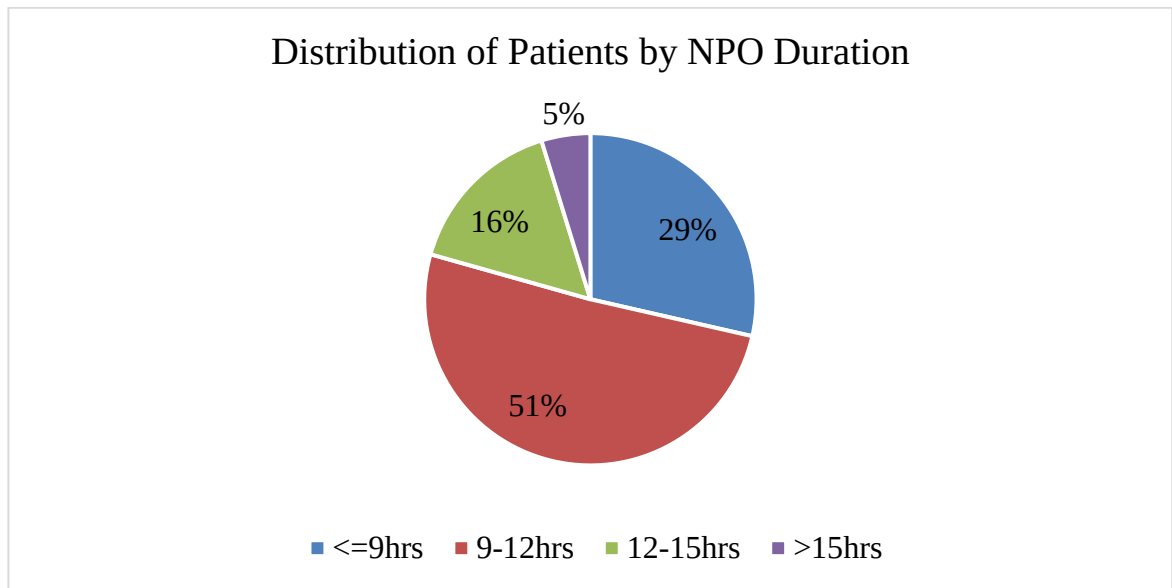


Fig. 4.8 Compliance with Mentioning NPO Time in Patient File in the IR Department

Figure 4.8 revealed that a significant proportion of patients (72%) fasted for longer than the recommended 6 hours. Among them, 51% fasted for 9-12 hours, and 21% fasted for 12 hours or more. Prolonged NPO times can lead to patient discomfort and dissatisfaction, highlighting an area for potential improvement in scheduling and operational efficiency to optimize patient experience.

4.9 Preoperative Wait Time Compliance for IR Daycare Patients

Figure 4.9 showed that 67% of patients were within the predefined TAT of 2 hours before entering the operative area. However, 33% of patients exceeded this wait time limit. This data suggests variability in the efficiency of patient flow and preoperative preparation processes specifically for IR Daycare patients.

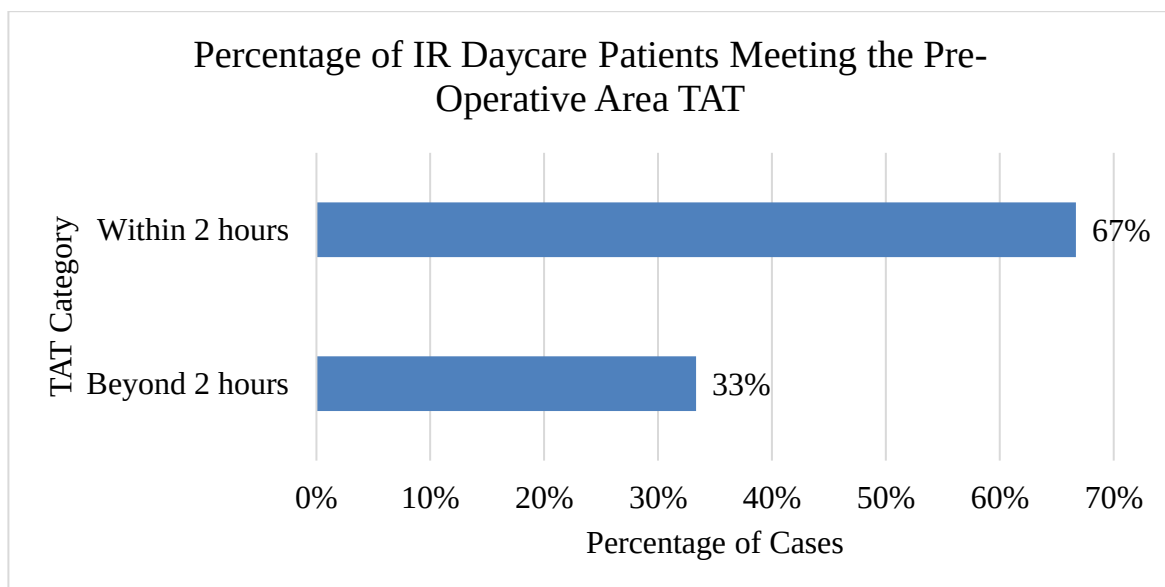


Fig. 4.9 Percentage of IR Daycare Patients Meeting the Pre-Operative Area TAT in the IR Department

4.10 Preoperative Wait Time Compliance for IPD Patients

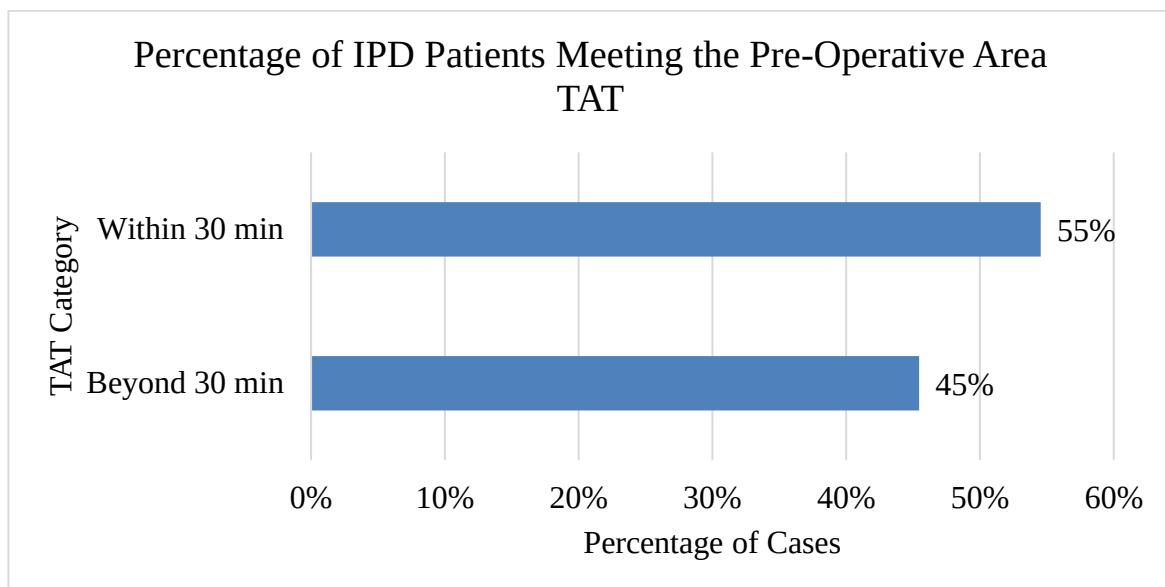


Fig. 4.10 Percentage of IPD Patients Meeting the Pre-Operative Area TAT in the IR Department

The analysis of figure 4.10 showed that 55% of patients adhered to the predefined TAT of 30 minutes before entering the operative area. However, 45% of patients exceeded this wait time limit, underscoring challenges in ensuring efficient patient flow and timely procedural readiness, particularly for IPD patients.

CHAPTER: 5

DISCUSSION

The findings from this study provide a comprehensive overview of the operational challenges and inefficiencies within the IR department at Medanta Gurgaon. This discussion integrates these results with insights from existing literature, exploring their implications for improving departmental efficiency and patient satisfaction. Recommendations based on these insights are also provided.

5.1 High Cancellation Rates

The 23% cancellation rate identified in our study highlights a significant operational challenge. Financial clearance issues accounted for 39% of these cancellations, while the remaining 61% were due to various other factors such as doctor cancellations, patient medical conditions, and patient non-attendance. This aligns with the findings of White (2018), who emphasized the need for pre-procedural checklists and physician start-time reminders to reduce delays and cancellations in IR settings. Implementing such measures could streamline patient readiness and reduce cancellation rates.

5.2 Scheduling Accuracy and On-Time Starts

Our study further showed that many of the procedures started outside the set time as indicated by the patients undermining the efficiency of the procedures and overall satisfaction. Related concerns were revealed by Villarreal et al. (2015) Emory University Hospital where inter-professional teams attained the goal of diminishing delays by heading for the patients and adopting necessary actions. Similarly, pre-OR_TIMEOUTs and performance pay incentives to enhance on-time start were confirmed and analyzed by subgroups of surgeons by Martin & Langell (2017) on a Veterans Affairs Medical Center.

5.3 NPO Compliance and Extended Fasting Durations

As for patients' compliance, an over 80% rate in documenting the NPO times is quite satisfactory, but 72% of patients were on the nil-per-mouth intake for more than 6 hours, which may lead to discomfort and dissatisfaction. Similar to this study, others like Nandwana et al (2021) were also found to have noted this issue and adopted standardization of some practices to enhance start on time and cut down on delays. Maybe patients are waiting for a long time without knowing the expected procedures time that requires them to undergo NPO or some scheduling problems that should be address to reduce the NPO time.

5.4 Utilization Patterns and Procedure Room Distribution

However, the existence of multiple procedures and a rather diverse pool of patients served by the IR department proves the point that such diverse patient population is not easy to manage. Concerning the performed procedures, DSA was the most common (48%), whereas USG (36%) and computed tomography (CT) (16%) were opted for less frequently. Dexter et al. (2020) have mentioned that to get the optimum use of the procedure rooms and to begin on time, it is necessary to have efficient resource planning and management.

5.5 Compliance with Preoperative Wait Times

In a nutshell, the IR Daycare patients' schedules showed that 67% complied with the predetermined preoperative wait time, while 55% of the IPD patients were on schedule. This goes a long way in supporting the need for improving the patient flow or at least the fine-tuning of preoperative preparations. The same was noted by Han et al. (2015) who described the frequently occurring first-case delay issues concerning neurosurgical operating rooms and alleviated them through a direct method of process mapping and qualitative analysis, which all in all reduced first –case delay and enhanced operational flow.

5.6 Recommendations for Future Research

- **Longitudinal Studies:** As a result, carrying out longitudinal investigations to trace shift within a period and evaluate the consequences of developed changes would yield better insights of the departments' productivity.
- **Comparative Studies:** Perhaps following a benchmarking approach contrasting the various IR departments in an effort to establish the best and the worst among them would help in improving the general performance.
- **Patient Experience:** The addition of results from qualitative measurement of patients' experiences as opposed to purely quantitative data could give a more complete picture and pointers towards where the services could still be improved as per patients' expectations.

CHAPTER 6:

CONCLUSION

Based on the findings of the study, the following are some of the important issues that require enhancement at the Intensive care unit of Medanta Gurgaon's Interventional Radiology department. Thus, focusing on insights from prior research and utilizing appropriate change initiatives, the department of surgery can improve the systems' performance and decrease the average number of cancelled/delayed procedures, as well as increase patient satisfaction levels. Goals will have to be reached through continuous quality improvement, staff development, and patient-centered care delivery.

The outcomes of this study elaborate the current issues and absences of effective management within the operational process of Interventional Radiology department at Medanta Gurgaon. The findings of this research reveal the key performance indicators for further enhancement through analyzing cancellation rates, scheduling accuracy, adherence to NPO regulation, use of procedure rooms, and preoperative stay time.

6.1 Summary of Findings

High Cancellation Rates:

- The overall cancellation rate was 23%, of which 39% were due to financial clearance while the rest 61% were due to cancellations by the Doctors, patients' medical conditions and non-attendance.

Scheduling Accuracy:

- Many procedures started at a time other than the prescribed one, which suggested problems with scheduling. Due to this, it results in the poor satisfaction of the patients and also the efficiency of the department.

NPO Compliance:

- Concerning the NPO times, 89% of cases were documented while the above findings show that 72% of the patients fast longer than the required 6-hour duration that can cause discomforts and dissatisfaction.

Procedure Room Utilization:

- DSA procedures were the most common (48%), followed by USG (36%) and CT (16%). Effective resource allocation is essential to optimize room utilization and ensure timely starts.

Preoperative Wait Times:

- Compliance with predefined wait times was 67% for IR Daycare patients and 55% for IPD patients, indicating variability in patient flow and preparation processes.

6.2 Implications for Operational Efficiency and Patient Satisfaction

- **Operational Efficiency:** High cancellation rates and scheduling inaccuracies contribute to inefficiencies. Streamlined processes and better resource management can significantly enhance departmental performance.
- **Patient Satisfaction:** Prolonged NPO durations and inconsistent wait times negatively affect patient experience. Improving communication and scheduling can enhance patient comfort and satisfaction.

6.3 Recommendations**Communication and Coordination:**

- Assign individuals from each lab to act as communication bridges between different departments, including daycare nurses, lab staff, and doctors.
- Have OPD nurses coordinate with TLs to stagger patient calls from the floor, minimizing wait times for IPD patients.

Financial Clearance:

- Appoint a dedicated staff member to facilitate financial clearance coordination with patients and doctors, ensuring timely scheduling and orderly procedures.

Streamlined Patient Care:

- Assign a specific doctor for OPD-based cases within the OPD area to streamline patient care and reduce wait times for IPD procedures.

- Establish a team comprising a TL, one USG nurse, one DSA nurse, and the nursing supervisor to coordinate with doctors regarding NPO status and ensure proper patient preparation.

Operational Continuity:

- Limit the number of daycare nurses fetching patients to three at a time, while ensuring two nurses remain in the daycare to maintain operational continuity.
- Task DSA staff with notifying the TL approximately 30 minutes before procedure completion to facilitate timely patient transitions.

Checklist and Protocols:

- Implement a protocol for OPD nurses to verify checklist attachment with prescriptions and for TLs to ensure checklist attachment with doctor's progress sheets.
- Recommend scheduling the first patient of the day from the cash category, as their financial clearance process tends to be faster.

Training and Skill Development:

- Provide training sessions to enhance communication and teamwork skills among nursing staff and doctors.
- Implement skill development programs to empower nurses with the necessary expertise for efficient patient care.

By addressing these recommendations, the IR department at Medanta Gurgaon can enhance its operational efficiency, reduce delays and cancellations, and improve patient satisfaction, ultimately leading to better patient outcomes and a more efficient healthcare delivery system.

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