A STUDY ON FACTORS AFFECTING THE CATH LAB SCHEDULING PROCESS USING DMAIC APPROACH IN THE MISSION HOSPITAL, DURGAPUR

GUIDED BY: DR. VINOD KUMAR SV

PRESENTED BY : - ALKA RAI

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INTRODUCTION

A Cath Lab is an examination room in a hospital or clinic with diagnostic imaging equipment’s used to visualize the arteries of the heart and the chambers of the heart and treat any stenosis or abnormality found.

RESEARCH QUESTIONS

What are the factors affecting the Cath Lab Scheduling Process?

What measures should be taken to improve the Cath Lab Scheduling process?

OBJECTIVES OF STUDY

- To assess the factors affecting the Cath lab scheduling process by using DMAIC approach in The Mission Hospital, Durgapur
- To improve the scheduling process of Cath lab in The Mission Hospital, Durgapur.
- To identify the process flow of Cath lab in The Mission Hospital, Durgapur.

Methodology

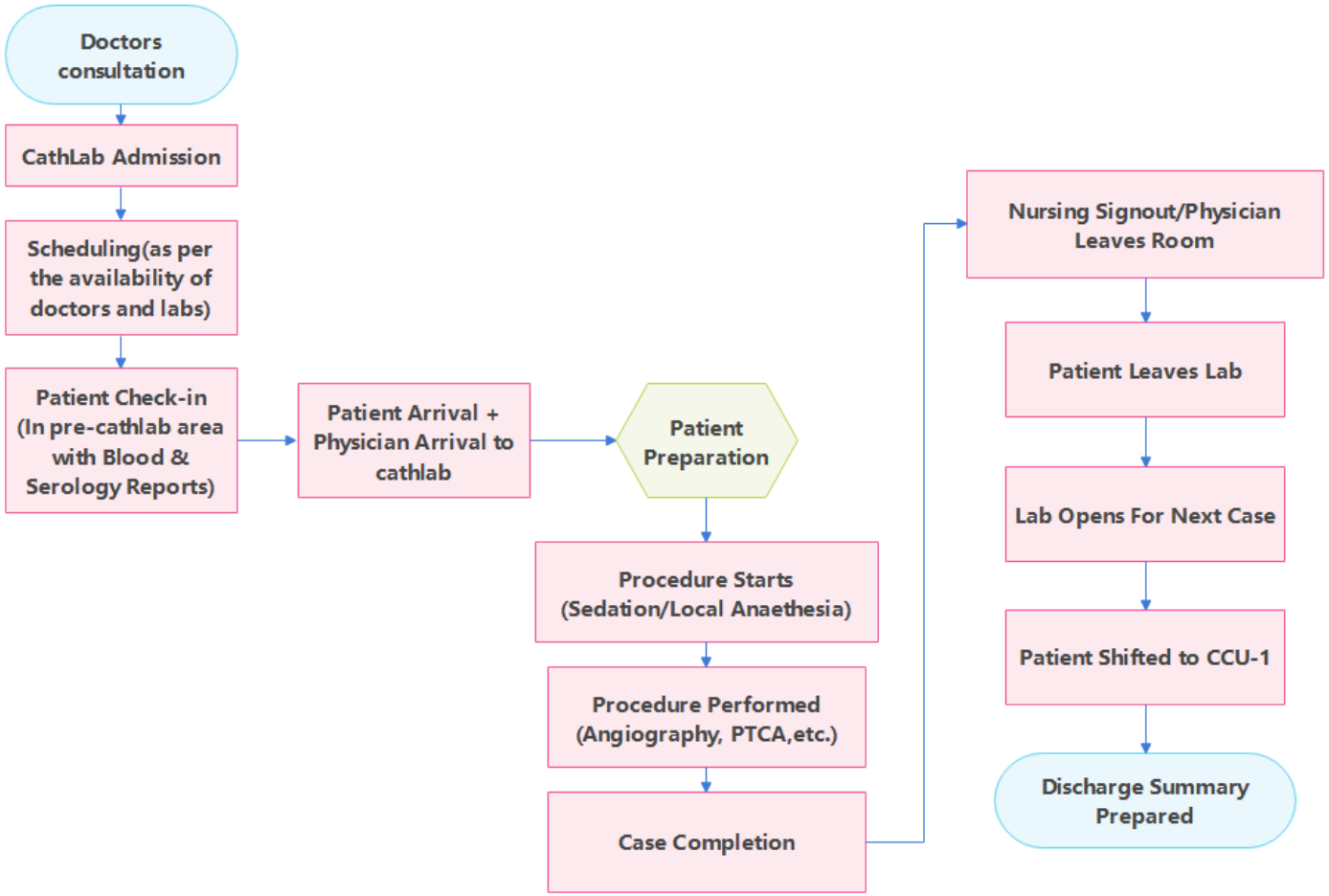
- STUDY DESIGN: Cross-sectional and observational study
- STUDY LOCATION: The Mission Hospital, Durgapur
- DURATION OF STUDY: Three Months (From 1-03-2023 to 31-05-2023)
- SAMPLE SIZE: All the patients admitted in Cath Lab during the study period with complete medical records between 8 AM to 8PM.
- DATA COLLECTION: -
- Sample Technique: - Convenient Sampling
- Inclusion Criteria: - All the patients admitted to Cath lab with complete medical records between 8 am to 8 pm
- Primary Data: - Collection through observation and record review.
- Quality Tool: -FISH-BONE Analysis/Pareto Chart.

DMAIC APPROACH

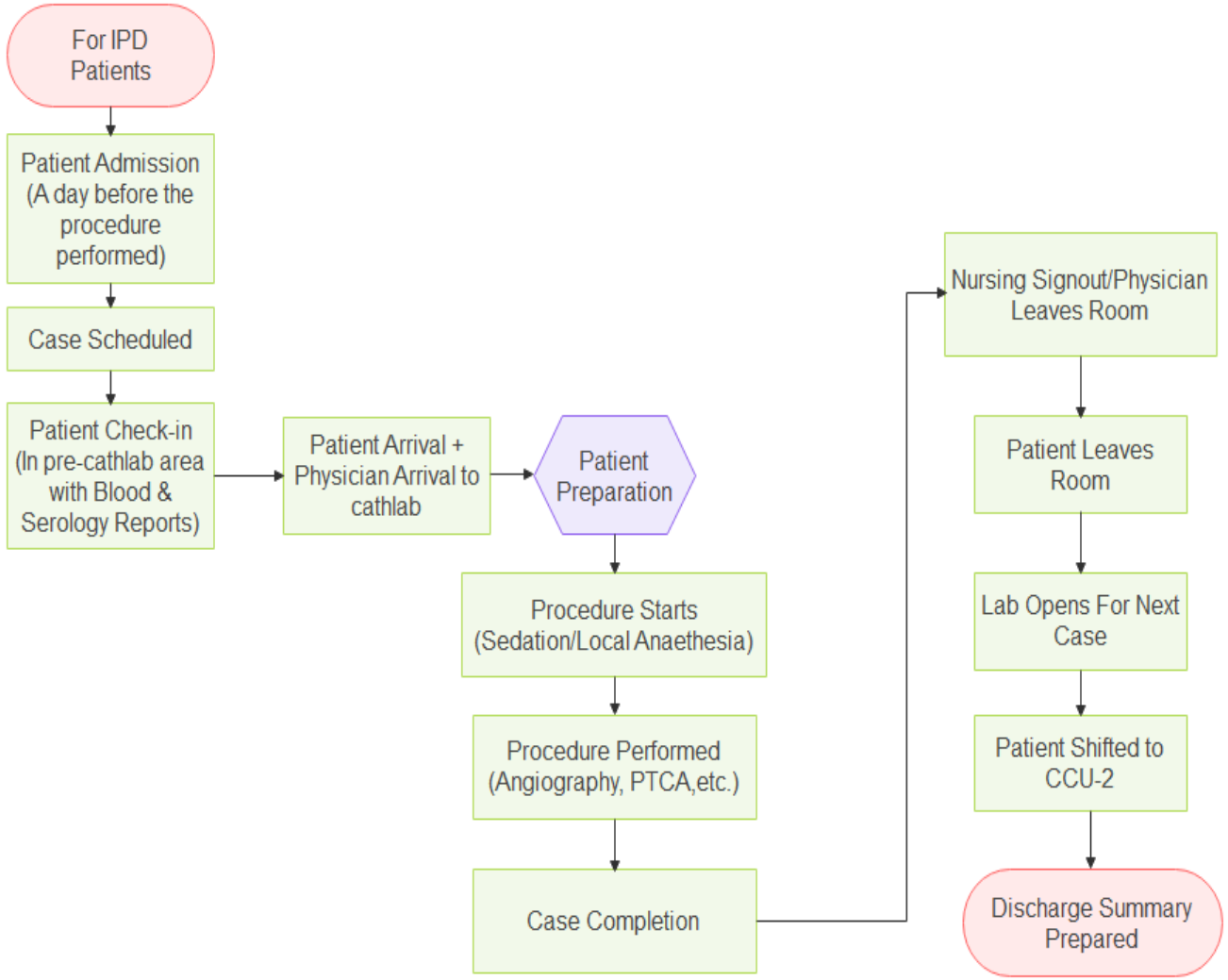
- Define the problems : -
- PROBLEMS: - Delay in procedures and non-productive time in Cath lab which results in the increase in patient waiting time in pre-Cath / post-Cath area.
- Unavailability of doctors on time.
- Lack of communication and coordination among staff.

Measure phase

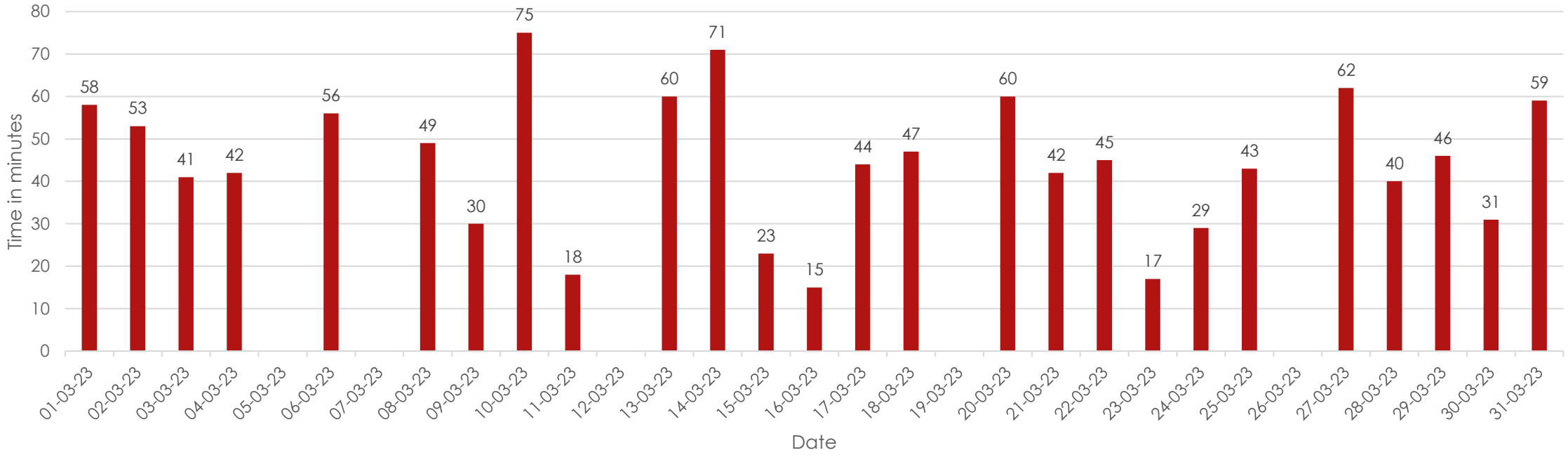
- Process flow of OPD patients



Process flow of IPD Patients(Pediatric Cases)

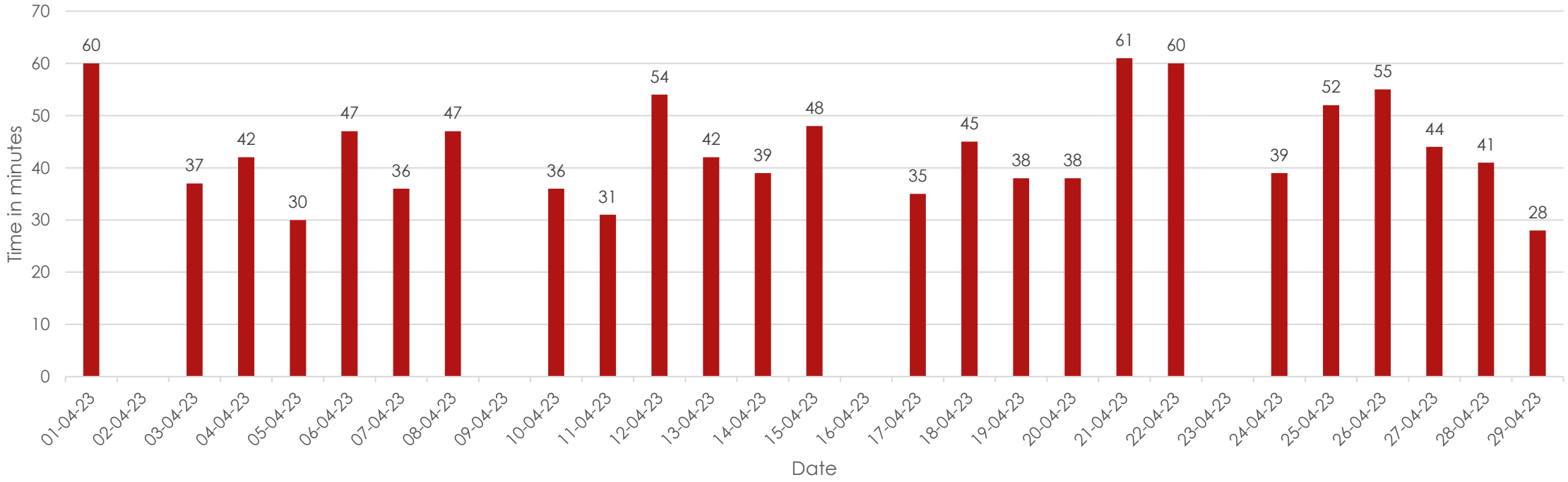


Average waiting time in Pre-Cath area in the month of March



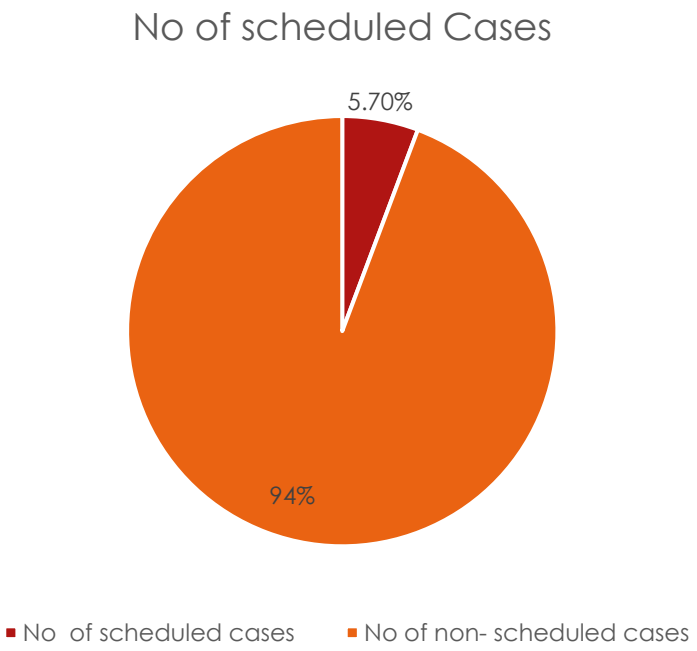
The average waiting time in the month of march is 44 mins

Average waiting time in Pre-Cath area in month of April



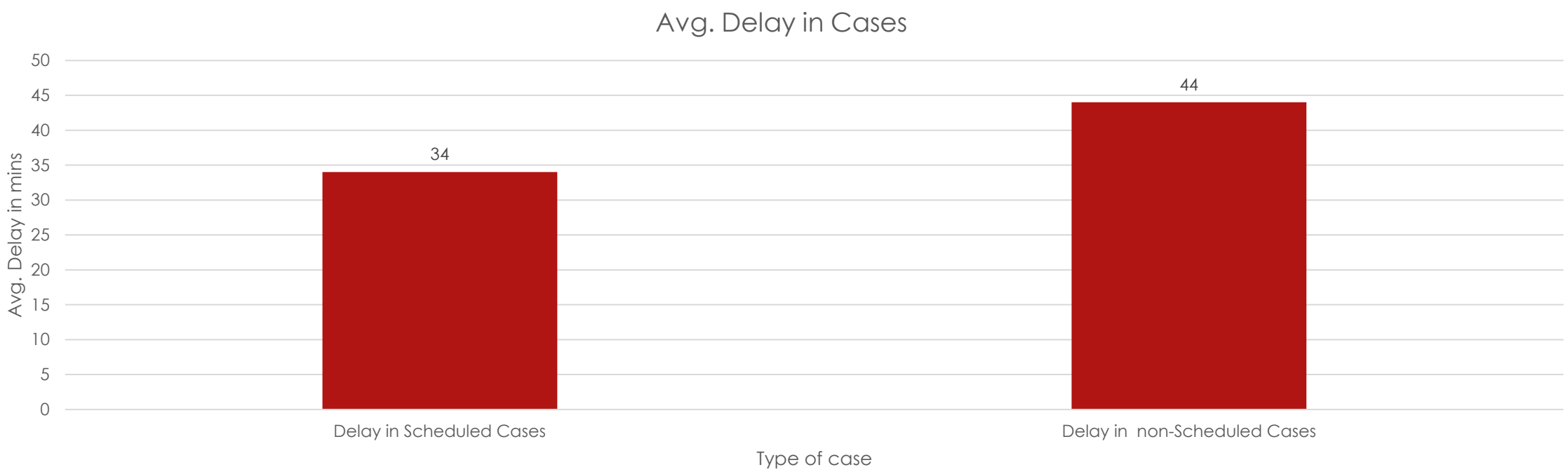
The average waiting time in the month of April is 40 mins

No of scheduled and non-scheduled cases

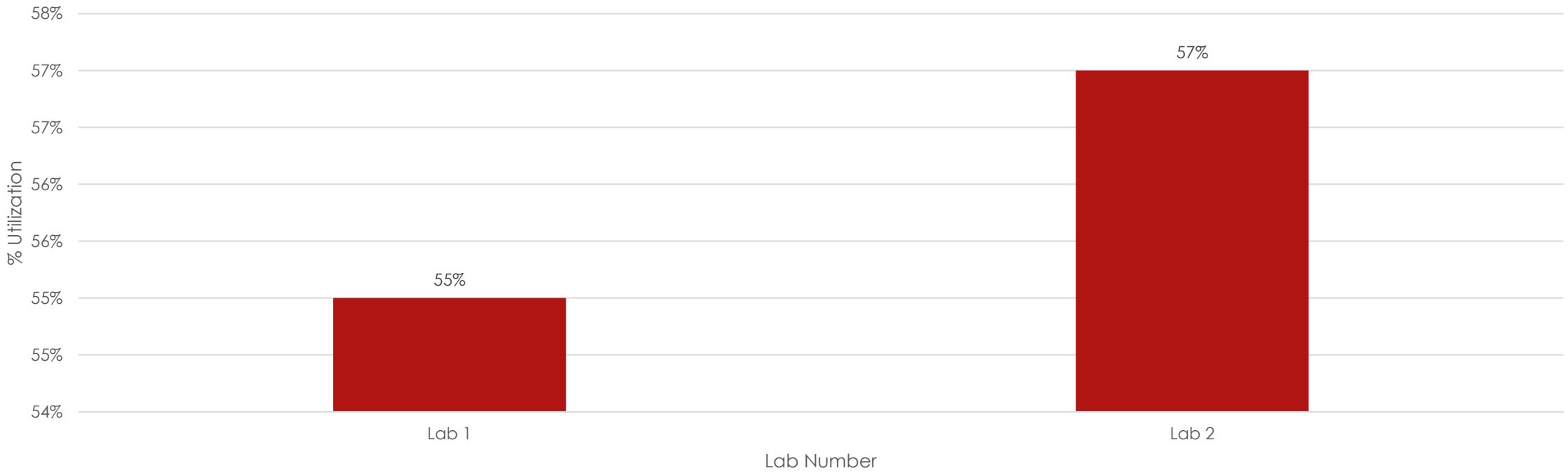


The number of scheduled and non-scheduled cases are 57 and 928 respectively

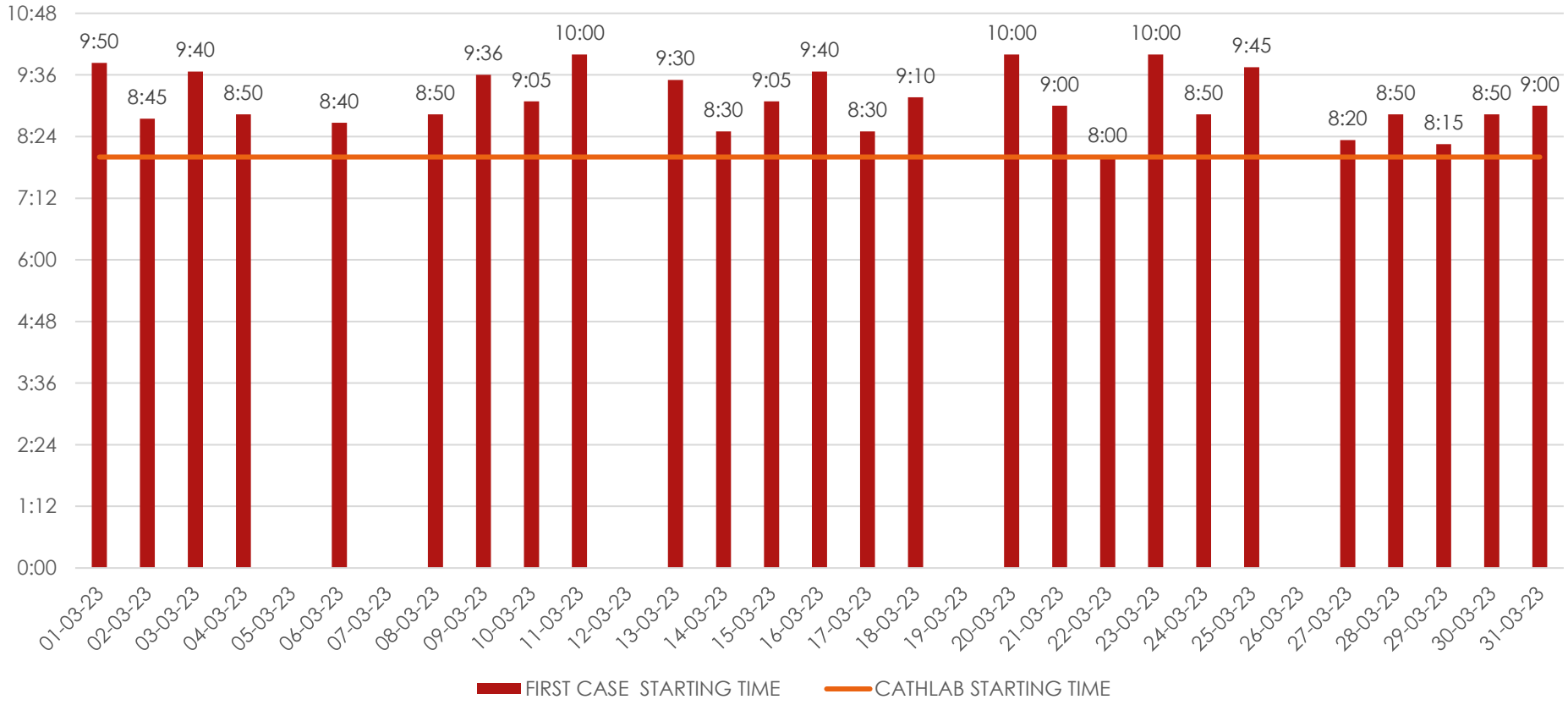
Avg. Delay in scheduled and non-Scheduled Cases:



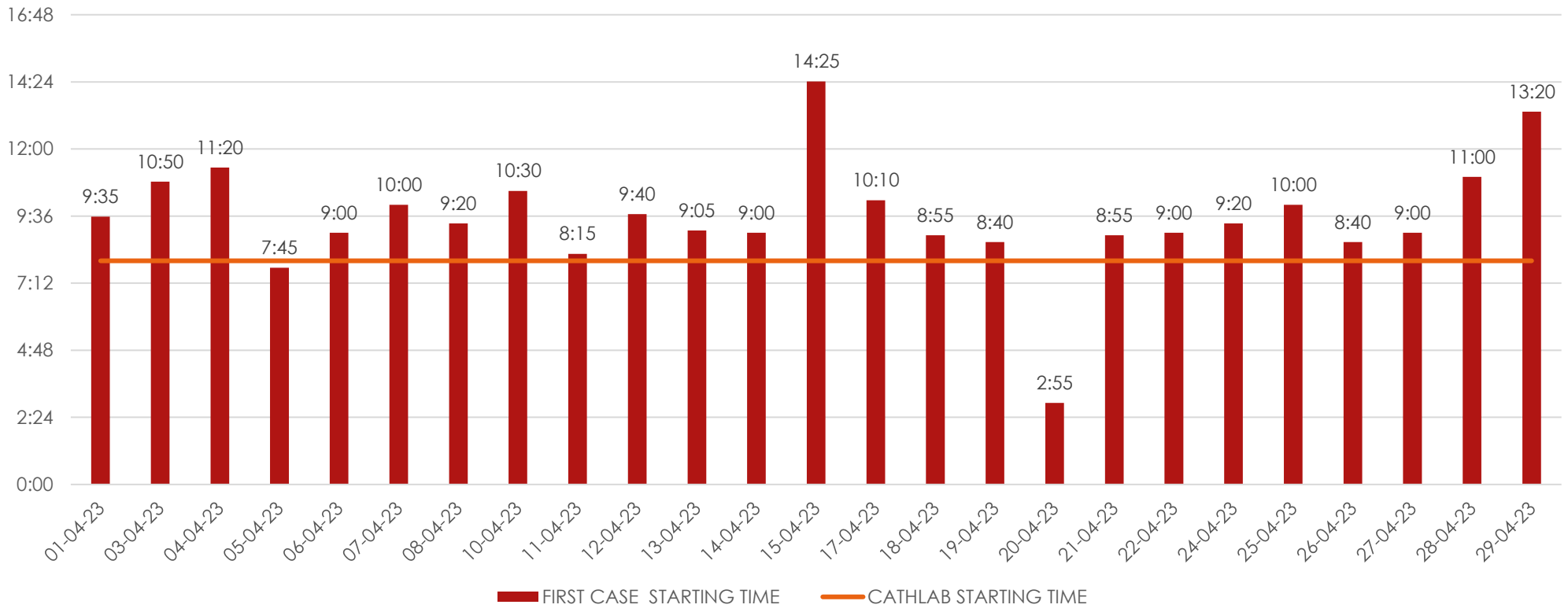
Utilization Rate



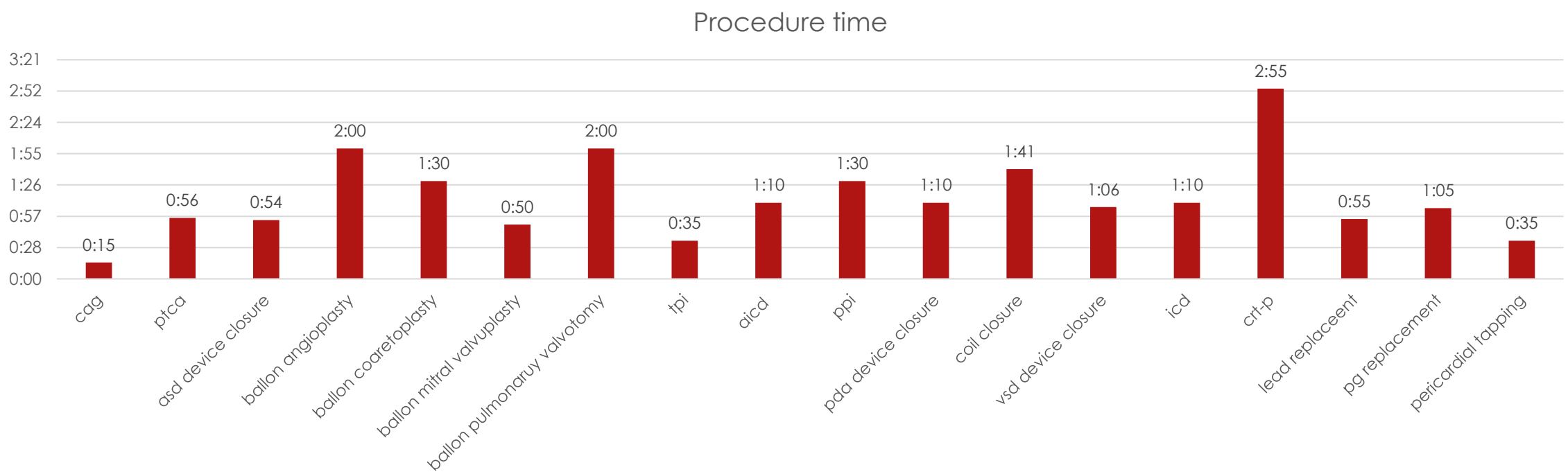
Delay in first case starting time in the month of march



Delay in first case starting time in the month of April



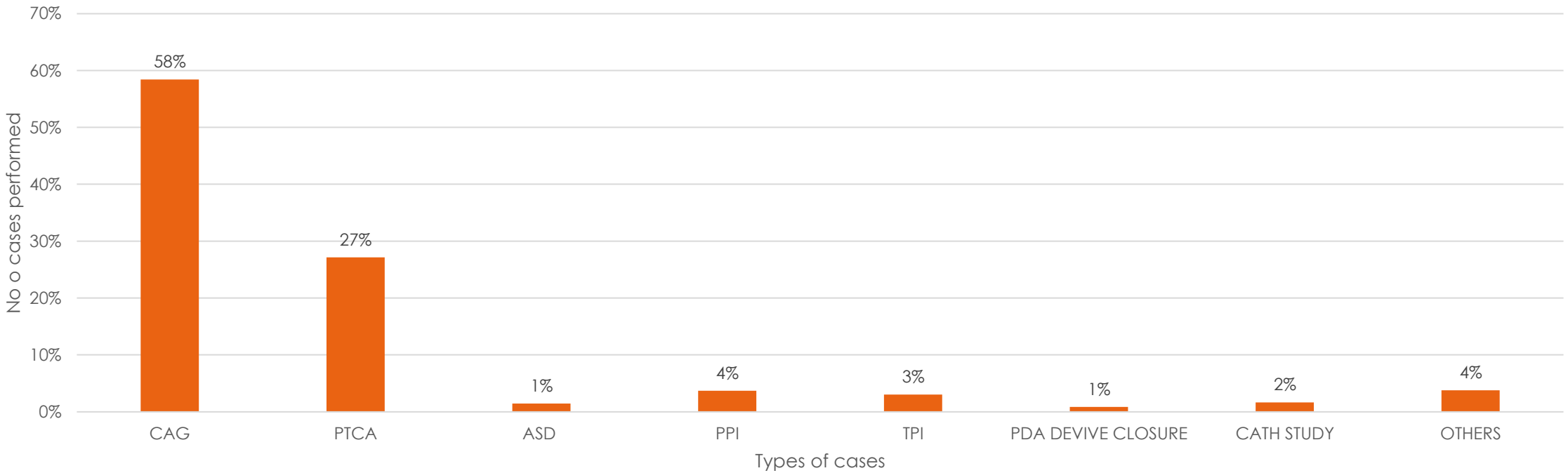
Average time taken to perform cardiac procedures



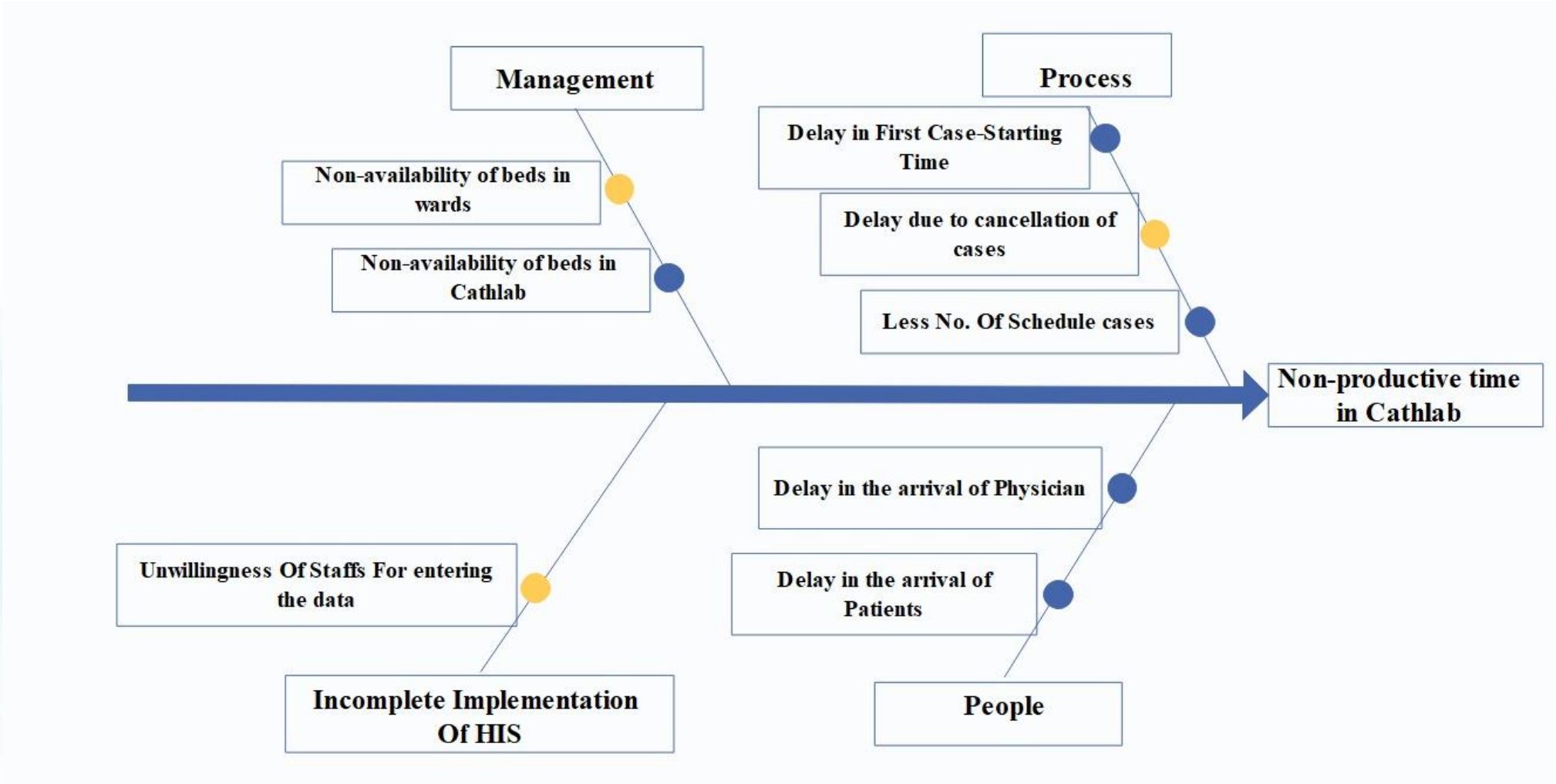
Comparison with the benchmark

PROCEDURES PERFORMED	BENCHMARK	Avg. Time taken to perform procedures
CAG	15 to 30 minutes	15 mins
PTCA	30 mins to 120 mins	56mins
BALLON ANGIOPLASTY	45 mins to 120 mins	54mins
ASD DEVICE CLOSURE	40 mins to 60 mins	54mins
BALLON COARETOPLASTY	60 mins to 150 mins	90mins
BMV	45 mins to 90 mins	55mins
BPV	60 mins to 120 mins	120 mins
TPI	15 mins to 30 mins	20 mins
AICD	120 mins to 150 mins	120 mins
PPI	45 mins to 75 mins	70 mins
PDA DEVICE CLOSURE	60 mins to 90 mins	70 mins-
COIL CLOSURE	60 mins to 180 mins	101 mins
VSD DEVICE CLOSURE	60 mins to 120 mins	66 mins
CRT-P	90 mins to 180 mins	165 mins
LEAD REPLACEMENT	60 mins to 120 mins	55 mins
PG REPLACEMENT	45 mins to 90 mins	65 mins
PERICARDIAL TAPPING	20 mins to 40 mins	35 mins
CATHOXYMETRY	40 to 60 mins	35 mins
CATH STUDY	60 mins to 120 mins	60 mins
PDA STENTING	60 mins 90 mins	85 mins
RVOT	180 to 300 mins	180 mins

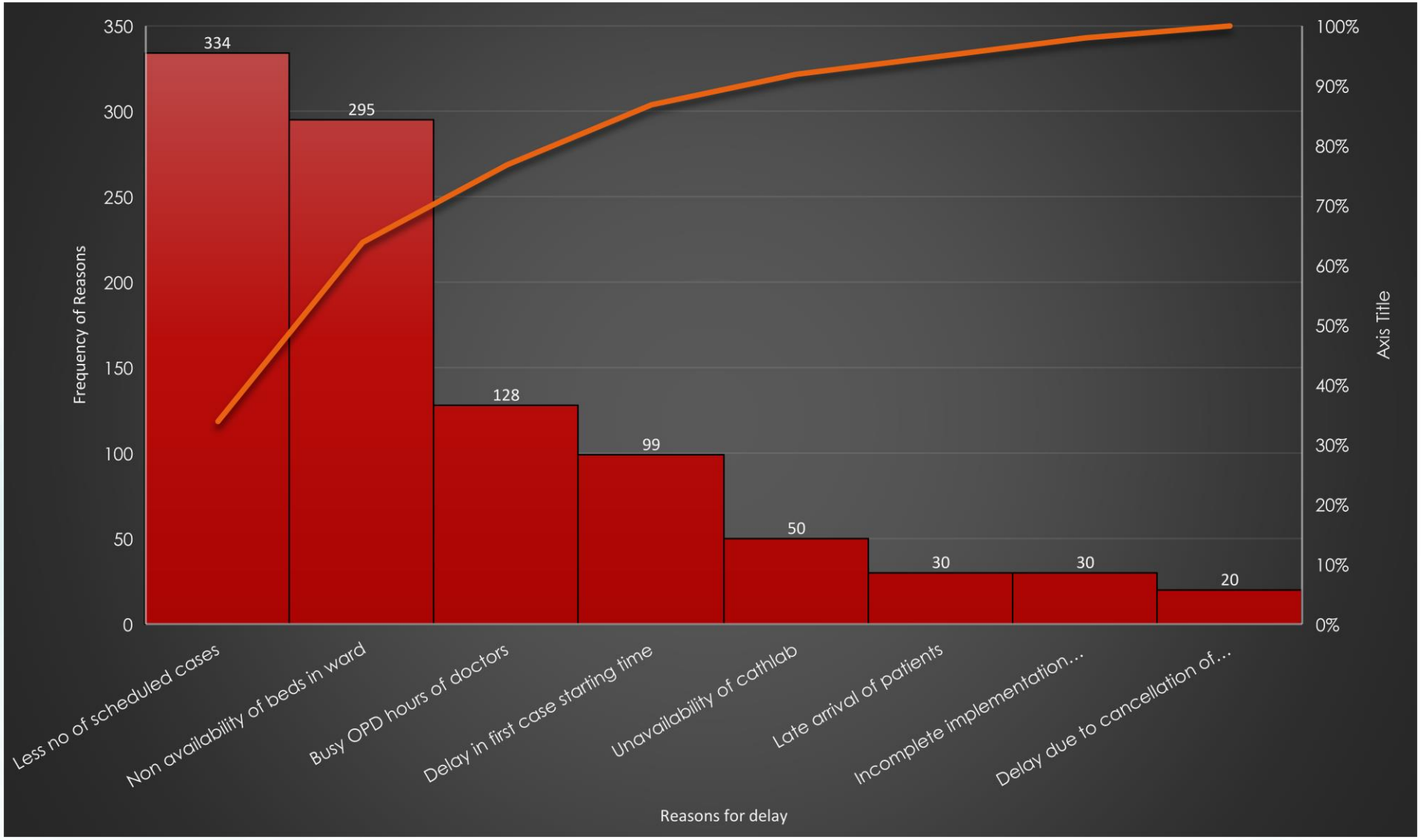
Category of cases performed



ANALYSIS PHASE: Fishbone Analysis



Pareto Analysis.



IMPROVE PHASE: -

- 1.Proper pre-Cath and post-Cath area should be there in the Cath lab.
- 2.Implementation of HIS should be done in Cath lab computers.
- 3.Doctors should arrive on time.
- 4.Documentation should be completed and maintained properly.
- 5.There should be an effective scheduling system.
- 6.Awareness about high quality care among nursing staff should be taken into consideration.

- 7.Patient selection for the day care and non- scheduled cases should be improvised that will result in less chaos and confusion.
- 8.There should be more scheduled cases and less non-scheduled cases.
- There should be proper communication and coordination among staff.

Control Phase: -

1.Streamline communication: Communication between all parties involved in the scheduling process is essential. Ensure that the scheduling process is streamlined and clear, with all relevant parties receiving notifications in a timely manner. Implement a system for real-time communication and updates to prevent miscommunications and ensure that everyone is on the same page.

2.Define policies and procedures: Clearly defined policies and procedures for the scheduling process can help ensure that all stakeholders understand their roles and responsibilities. Develop policies that outline case priority, booking guidelines, and cancellation procedures. This will help prevent scheduling conflicts and reduce the number of cancelled procedures.

3.Reduce wait times: Long wait times can be frustrating for patients and impact their overall experience. Consider implementing a just-in-time scheduling system that allows for more flexibility and can reduce wait times for patients.

4.Monitor and analyse data: Regularly monitoring and analysing data related to the scheduling process can help identify areas for improvement. Use data to track wait times, cancellations, and scheduling conflicts. Analysing this data can help identify trends and areas for improvement.

5.By implementing these strategies, healthcare organizations can improve the Cath lab scheduling process, resulting in better patient care and outcomes.

RESULTS

- 1.The findings of the study reveal several important observations regarding the operations and management of the hospital. Firstly, it was observed from that there is a lower number of scheduled cases, suggesting a potential issue in effectively utilizing the hospital's resources and facilities.
- 2.Secondly, the study identified an incomplete implementation of the hospital management information system. This finding indicates a potential gap in the hospital's technological infrastructure, which may affect data management, patient records.
- 3.Another significant finding is the unavailability of physician on time due to busy OPD hours. This finding implies that the doctors' schedules may be overloaded, leading to potential challenges in managing patient appointments and providing adequate care
- 4.Moreover, the study highlighted a delay in the first case starting time. This delay may have implications for patient experience and overall procedural efficiency.
- 5.The findings also shed light on inconsistent and longer waiting times in the Pre-Cath Area. This observation suggests a potential bottleneck in the pre-procedure area, which may hinder patient flow and cause patient dissatisfaction
- 6.Additionally, it was noted that there is no proper Pre-Cath and Post-Cath area available.
- Furthermore, the study found a delay in bed availability for day-care patients

RECOMMENDATIONS

1. Implementing a centralized scheduling system: In this system, a centralized scheduling team is responsible for scheduling appointments and procedures across multiple Cath Labs This ensures that scheduling is done in a consistent manner and avoids double booking or overbooking.

2. Predictive analytics: Predictive analytics can be used to forecast the expected demand for Cath lab procedures based on past data. This can help optimize scheduling by ensuring that adequate resources are available to accommodate the anticipated demand.

3. Optimizing time slots: Scheduling can be optimized by identifying the most efficient time slots for procedures. This could involve scheduling more complex procedures during off-peak hours to minimize disruption to other procedures.

4. Electronic scheduling: Moving to an electronic scheduling system can improve efficiency by reducing the need for manual processes. This can also improve communication and coordination among staff involved in Cath lab scheduling.

REFRENCES

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3) Agarwal S, Gallo JJ, Parashar A, Agarwal KK, Ellis SG, Khot UN, et al. Impact of lean six sigma process improvement methodology on cardiac catheterization laboratory efficiency. Cardiovascular Revascularization Medicine. 2016 Mar;17(2):95–101.

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THANK YOU