

CHAPTER - 11

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

¹Alka Rai

¹Student, IIHMR University

²Dr. Vinod Kumar SV

²Professor, IIHMR University

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INTRODUCTION

Catheterization laboratories, commonly known as Cath labs, play a crucial role in addressing various heart-related ailments. Physicians may recommend patients to undergo procedures in Cath labs to diagnose and treat conditions such as coronary artery disease, myocardial infarction, chest discomfort, heart failure, pulmonary hypertension, and pulmonary embolisms (blood clots). In these labs, interventional cardiologists work in coordination with a team comprising nurses, procedural X-ray technicians, and other support staff. Their collaborative efforts enable the swift evaluation of cardiovascular conditions and the implementation of interventions to address blockages and other arterial issues [1].

Three prerequisites before undergoing a Cath lab procedure include:

- i. Submitting allergy and current medication records to healthcare personnel, as certain drugs may require discontinuation a week before the procedure.
- ii. Adhering to any instructions regarding refraining from food or drink before the scheduled case.
- iii. Ensuring the presence of a family member to provide assistance.

Seeking medical attention in a Cath lab serves as a proactive measure to prevent the need for more invasive or costly treatments in the future. The minimally invasive techniques employed in Cath labs offer valuable insights to healthcare professionals for managing existing heart conditions and averting the development of new ones. Preventive measures involve educating individuals on cardiac emergencies, particularly acute coronary syndromes like severe bradycardia, as an effective strategy for early identification of heart diseases. Despite the rising prevalence of cardiovascular disorders such as percutaneous transluminal coronary angioplasty (PTCA), preventive measures remain crucial in addressing heart-related concerns [2][3].

RESEARCH QUESTION

1. What were the factors that affected the Cath Lab Scheduling Process?
2. What measures should have been taken to improve the Cath Lab Scheduling process?

RESEARCH OBJECTIVE

1. To evaluate the influences on the Cath lab scheduling procedure at The Mission Hospital, Durgapur, employing the DMAIC approach.
2. To enhance the scheduling process of the Cath lab at The Mission Hospital, Durgapur.
3. To identify the operational sequence of the Cath lab at The Mission Hospital, Durgapur.

RESEARCH METHODOLOGY

The research employed a cross-sectional and observational study design. The study was conducted at The Mission Hospital, Durgapur, over a three-month period, spanning from March 1, 2023, to May 31, 2023. The sample included all patients admitted to the Cath Lab during this period, possessing complete medical records, and undergoing procedures between 8 AM and 8 PM. Convenient sampling method was utilized to select patients for inclusion in the study. Patients admitted to the Cath Lab between 8 AM and 8 PM were considered eligible for inclusion. This methodology aimed to provide a comprehensive understanding of the factors influencing the Cath Lab processes at The Mission Hospital, Durgapur, by employing both primary and secondary data collection methods.

This methodology, widely employed in the field of Six Sigma and process improvement, was applied to various domains, including healthcare, specifically Cath lab scheduling. The DMAIC approach for Cath lab scheduling was utilized to systematically identify and address challenges faced in scheduling procedures. It promoted a data-driven and evidence-

based approach to process improvement, resulting in more efficient resource utilization, improved patient outcomes, and enhanced overall performance of the Cath lab.

RESULTS AND DISCUSSION

The data reveals critical insights into the operational dynamics of the Cath lab. In March, there was an observable delay of 60 minutes in initiating the first case, commencing around 9 AM despite the lab's early opening at 8 AM. This initial delay suggests potential inefficiencies within Cath lab operations, emphasizing the need for optimization. April witnessed a more pronounced delay, averaging 120 minutes for the initiation of the first case. This heightened delay raises concerns about operational bottlenecks and underscores the urgency for comprehensive improvements in scheduling processes. Patient flow management is paramount for operational effectiveness. In March, patients encountered an average waiting time of 44 minutes between being wheeled into the pre-Cath area and entering the Cath lab. The reduction to 40 minutes in April signifies a positive trend yet underscores the ongoing importance of refining patient flow management strategies. The distribution of cases reveals a significant imbalance, with only 5% being scheduled and a staggering 94% falling under the non-scheduled category. Addressing this discrepancy is imperative, highlighting the pivotal role of an efficient scheduling system in managing cases effectively. Delving into the delay metrics, scheduled cases experience a slightly lower delay of 43 minutes compared to 44 minutes in non-scheduled cases. Advocating for an improved scheduling system becomes evident, aiming for a higher proportion of scheduled cases to streamline operations.

Both Lab-1 and Lab-2 exhibit suboptimal utilization rates at 55% and 57%, respectively. This indicates inefficient resource management, emphasizing the necessity for strategic improvements to enhance utilization and overall performance. Procedural benchmarks are surpassed in CAG, Lead replacement, and RVOT procedures, showcasing improved efficiency and performance in these specific interventions. Patient distribution throughout March averages at 21 patients per day, a metric that drops to 17 patients per day in April. This shift in patient volume necessitates a nuanced approach to accommodate fluctuating demands. Pareto analysis identifies key contributors to delays, including the number of scheduled cases, non-availability of beds, busy OPD hours, and delays in the first case starting time. These factors should be prioritized for targeted interventions.

In response to identified issues, corrective and preventive actions are recommended. These include refining scheduling processes, enhancing communication channels, and addressing challenges related to bed availability and physician schedules. Implementing these measures is crucial for rectifying operational inefficiencies and enhancing overall Cath lab performance.

CONCLUSION

In conclusion, the study underscores a critical observation regarding the deficiency in scheduling practices within the Cath lab, leading to notable repercussions. The evident lack of proper scheduling has been identified as a significant source of patient dissatisfaction. The limited number of scheduled cases exacerbates the challenge, making it arduous to effectively manage the cathlab's process flow. The high influx of unplanned cases places a substantial burden on hospital staff,

compelling them to work extended hours. This operational strain not only affects the well-being of the staff but also results in significant overtime expenses for the organization. The financial implications of overtime payments contribute to an overall loss for the organization.

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