



# Archives of The Medicine and Case Reports

Journal Homepage: <https://hmpublisher.com/index.php/AMCR>  
eISSN: 2747-2051



## Lean Approach to Identifying Problems in Outpatient Pharmacy Installations at Simo General Hospital, Boyolali, Indonesia

Setiaji Wisnu Wardana<sup>1\*</sup>, Rina Herowati<sup>1</sup>, Wiwin Herdwiani<sup>1</sup>

<sup>1</sup>Master of Pharmacy Study Program, Faculty of Pharmacy, Universitas Setia Budi, Surakarta, Indonesia

### ARTICLE INFO

#### Keywords:

Lean approach  
Pharmaceutical services  
Strategy  
Waste

#### \*Corresponding author:

Setiaji Wisnu Wardana

#### E-mail address:

[wisnu.wardana0331@gmail.com](mailto:wisnu.wardana0331@gmail.com)

All authors have reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/amcr.v4i3.335>

### ABSTRACT

Lean approach is a method used to analyze value-added and non-value-added activities with the aim of minimizing or eliminating the waste that happens in an institution. The purpose of this research is to identify waste and find the root cause of waste that occurred in the outpatient pharmacy installation at the Simo General Hospital. This research method is non-experimental descriptive research with a qualitative descriptive exploratory approach through questionnaires, observation, and in-depth interviews with respondents. The analysis of this research is the observation of the service process flow with value stream mapping, distributing questionnaires, Borda method to search waste critically, 5why interviews to find the root cause of waste criticism and suggestions for solving problems. The results showed that the critical waste that occurred was waste waiting with a percentage value of 23.41%. The root cause of waste waiting is the accumulation of prescription queues at the preparation, dispensing delivery of drugs, and PIO stages due to a lack of pharmaceutical technical personnel. The proposed improvement in waste waiting is to increase the number of pharmacy officers by first calculating the workload.

### 1. Introduction

In a rapidly changing global context, the healthcare sector is the main stage of inevitable transformation. Especially in pharmaceutical installations in hospitals, the demand to provide services that are more efficient, of high quality, and satisfy patients is increasingly pressing. Amidst this complexity, the Lean approach has emerged as a very effective tool in uncovering and addressing the challenges faced, not only in various industries but also in the realm of healthcare. The roots of the Lean approach can be traced back to the practices introduced by the Toyota production system (TPS), which prioritized eliminating waste, increasing efficiency, and delivering value to customers. Even though it originates from the manufacturing sector, the essence of Lean has

morphed into a methodology that is relevant to be applied in various contexts, including pharmaceutical installations in hospitals.<sup>1-5</sup>

The lean approach in pharmaceutical installations is not just about reducing costs or speeding up processes; it involves a deeper philosophy on how to achieve operational excellence by identifying and addressing the root causes of problems. In this case, the pharmaceutical installation at the Simo General Hospital, Boyolali, Indonesia, is not only faced with the need to provide accurate and timely medicines but also to ensure that patients get a safe and meaningful experience while in care. By implementing a lean approach, pharmacy establishments can identify problems such as long queues, inefficient inventory management, or errors in medication processes.



Furthermore, this approach stimulates cross-disciplinary collaboration, strengthens communication, and promotes continuous improvement. Additionally, an emphasis on providing value to patients helps create a better experience and builds trust.<sup>6-10</sup>

Simo General Hospital Boyolali, Indonesia, is one of the health service entities that is continuously trying to improve outpatient pharmaceutical services to patients. In this effort, implementing a lean approach can help hospitals identify existing problems in outpatient pharmacy installations and design solutions that are more efficient and effective. This study aimed to identify the process of pharmaceutical services in hospitals, especially in outpatient care units, so as to map activities that have added value and do not have added value (waste) for pharmaceutical services in hospitals and can find out the root causes of waste that occurred in the pharmacy service at the Simo General Hospital outpatient unit.

## 2. Methods

This research is a non-experimental study with a descriptive design of the process flow of pharmaceutical services at the Simo General Hospital pharmacy installation in the outpatient unit. This study aims to determine the process flow of pharmaceutical services in the hospital pharmacy installation (IFRS) using the approach of lean hospital management. This concept describes all processes or flows that are observed with the aim of searching for waste that occurs in each process. Using the method of value stream mapping, all activities or activities that do not have added value will be obtained. Analysis of the root cause of the problem using the method root cause analysis using a fishbone diagram as a tool.

Data were obtained prospectively or by direct observation of the pharmaceutical service process at IFRJ Simo General Hospital in the outpatient unit. The data collected is in the form of qualitative and quantitative data. Qualitative data were obtained

based on direct interviews with the head pharmacist of the pharmaceutical installation, outpatient pharmacy installation staff, and other related parties. Quantitative data were obtained by direct observation of the flow of the pharmaceutical service process at the hospital pharmacy installation (IFRS) in the outpatient unit by measuring the waiting time for a patient's prescription from the time the patient submitted the prescription until the patient took the drug.

## 3. Results and Discussion

The highest level result is waste waiting, with a percentage value of 23.41%. Waste with the highest level set as waste critical in the flow of outpatient prescription services at IFRJ Simo General Hospital. With the knowledge of critical waste, researchers look for the root cause of the problem using the root cause analysis method. The root cause analysis method is carried out by providing in-depth questions with the nature of question 5whys until the answers are obtained, which are known to be the root cause of the problem in a service process flow. Waste waiting is waste that occurs because there are no ongoing activities or waiting processes, for example, people waiting time, machine waiting time, or material waiting time to be processed.

The results of in-depth interviews with pharmacists person responsible for outpatient care at IFRJ Simo General Hospital are, knowing the root cause of the problem of waste waiting that happened. The waste waiting in this process is the accumulation of prescription queues at the IFRJ Simo General Hospital due to a lack of pharmaceutical technical personnel, specifically at the preparation and dispensing stages, while at the drug delivery and PIO stages, there were no officers on duty at the post, so the drugs to be handed over had to wait to be handed over because the officers were still working on the prescription queue behind them. There are several service processes in IFRS Hospital waste identified, and this indicates that the service cannot be said lean.



Table 1. Waste ratings at IFRJ Simo General Hospital.

Rank	Waste type	Percentage
1	Waiting	23,41 %
2	Defect	17,46 %
3	Transportation	15,08 %
4	Overproduction	13,49 %
5	Motion	10,32 %
6	Inventory	9,92 %
7	Over-processing	5,95 %
8	Human potential	4,37 %

Table 2. 5whys interview results.

Why	Answer
Why is there a buildup of prescription queues at Simo Hospital's IFRJ?	Because there is a buildup of prescriptions at the preparation stage, dispensing to drug delivery and PIO (drug information service)
Why is there a buildup of prescriptions at the preparation, dispensing, to delivery of drugs and PIO stages?	Because the number of preparation officers, dispensing up to the delivery of drugs and PIO is limited
Why are there a limited number of officers for preparation, dispensing, to delivery of drugs and PIOs?	Because the number of vocational staff or pharmaceutical technical staff at that stage was only one person each, and at the drug delivery and PIO stages, there were no officers on guard
Why are the number of pharmaceutical technical staff at the preparation, dispensing drug delivery, and PIO stages only amounting to one person each?	Because the pharmaceutical installation has already proposed to increase the number of pharmaceutical technical personnel, but this has not been realized
Why has the proposed increase in the number of employees not been realized?	Because according to hospital management, increasing the number of employees, especially pharmaceutical technical staff, is not a solution. There has been an increase in the number of employees, but it has not shown maximum results

Therefore something needs to be done to minimize or even eliminate the waste that happened. Proposals for improvements are prepared with the aim of being taken into consideration for making changes.

Proposed improvements are made by considering many aspects because in proposing an improvement or planning an idea in a hospital, especially an outpatient unit, one needs to consider several aspects of policies, applicable regulations, funds, and authorized elements, and the need for consultation with the hospital. Proposed improvements to minimize waste in IFRJ of Simo General Hospital, namely with proposals that are long-term, medium, and short-term. The preparation of improvement proposals is

based on the problems that occur in the IFRJ Simo General Hospital. Some of the problems that occur are waste critical, i.e., waste waiting, which was caused by a buildup of prescription queues caused by a buildup at the preparation, dispensing stages up to the drug delivery and PIO stages because there was only one officer on duty each, and there were no officers on guard at drug delivery posts and PIO. In addition, the results of interviews with pharmacists person responsible It is known that there are other problems that cause a buildup of prescription queues, namely prescription reviewers only number one pharmacist, and the SIM RS (hospital information system) is still in the development stage so it often happens loading at



the time of inputting the prescription to the hospital's driver's license and when there is a drug vacancy during the preparation process so that the prescribing doctor has to re-confirm regarding administering the drug to the patient concerned. The long-term proposal in this study is to propose to calculate in advance the workload of each employee in order to analyze how far additional employees are needed so that it does not give rise to an assessment that adding employees is not yet a solution to improve service quality, especially in terms of waiting time for prescription queues. Outpatient at IFRJ Simo General Hospital. Because judging from the results of the interviews regarding the long review time and only one person on duty at each post, it is felt that there is still a need to add more officers. The medium-term proposal in this study is to propose to evaluate the procurement plan so that later there will be no drug shortages in the pharmaceutical unit.

The results of the study show that long queues are often the main cause of waste waiting in outpatient pharmacy services.<sup>11-13</sup> Patients who have to wait a long time to get their medication feel frustrated and uncomfortable. This can disrupt the patient experience and reduce their level of satisfaction with the service. Another study also revealed that the approval process in pharmaceutical services can take quite a long time. This could be due to unoptimized workflow, unclear procedures, or lack of coordination between the teams involved in the approval process.<sup>14-16</sup> Waste waiting in taking medication can have a serious impact on patient adherence to their medication. If patients experience delays in getting their medication, they may not be able to follow the treatment schedule recommended by medical personnel. This can affect the effectiveness of treatment and patient recovery.<sup>17,18</sup> Waste waiting can also increase the workload of medical personnel in pharmaceutical services. Long queues and slow approval processes require more time and effort from pharmacists, which in turn can affect their

productivity and pose a risk of burnout. The rush that may arise due to time pressure in a long queue situation can increase the risk of errors in drug preparation. When staff are in a rush, there is the potential for errors in dosing or labeling of medications, which have potential risks to patient safety.<sup>19,20</sup>

#### 4. Conclusion

Critical waste that occurs is waste waiting, with a percentage value of 23.41%. The root cause of waste waiting is the buildup of prescription queues at the stage of preparation, compounding to drug delivery and PIO caused by the lack of pharmaceutical technical personnel.

#### 5. References

1. Womack JP, Jones DT. Lean thinking: Banish waste and create wealth in your corporation. Free Press; 2003.
2. Liker JK. The Toyota way: 14 Management principles from the world's greatest manufacturer. McGraw-Hill; 2004.
3. Radnor Z, Osborne SP. Lean: A strategic business philosophy. In: Radnor Z, Bucci G, eds. Evaluating public management reforms. Springer; 2010: 57-77.
4. Burgess N, Radnor Z. Evaluating Lean in Healthcare. International Journal of Health Care Quality Assurance. 2013; 26(3): 220-35.
5. Graban M. Lean hospitals: Improving quality, patient safety, and employee engagement. CRC Press; 2011.
6. MacKenzie C. Applying lean in healthcare: A collection of international case studies. CRC Press; 2010.
7. Mazzocato P, Savage C, Brommels M, Aronsson H, Thor J. Lean thinking in healthcare: A realist review of the literature. Quality & Safety in Health Care. 2010; 19(5): 376-82.



8. Radnor ZJ, Holweg M, Waring J. Lean in healthcare: The unfilled promise? *Social Science & Medicine*. 2012; 74(3): 364-71.
9. Dahlgaard JJ, Dahlgaard-Park SM. Lean production, six sigma quality, TQM and company culture. *The TQM Magazine*. 2006; 18(3): 263-81.
10. Liker JK, Convis G. *The Toyota way to lean leadership: Achieving and sustaining excellence through leadership development*. McGraw-Hill Education; 2012.
11. Womack JP. Lean thinking in higher education. *Quality Approaches in Higher Education*. 2012; 3(1).
12. Radnor ZJ, Johnston R, Love PED. Lean in UK government: Internal markets and the construction of improvement. *Public Money & Management*. 2008; 28(1): 13-20.
13. Rother M, Shook J. *Learning to See: Value Stream Mapping to Add Value and Eliminate MUDA*. Lean Enterprise Institute; 1999.
14. Womack JP, Jones DT, Roos D. *The machine that changed the world: The story of lean production*. HarperCollins Publishers; 2007.
15. Toussaint JS, Berry LL. The promise of Lean in health care. *Mayo Clinic Proceedings*. 2013; 88(1): 74-82.
16. Kenney C, Florida R. *Beyond mass production: The Japanese system and its transfer to the US*. Oxford University Press; 1987.
17. Fillingham D. *The Role of Lean Leadership in Hospitals: New thinking in hospital management*. CRC Press; 2011.
18. Kenney M, Kenney C. *Wrench in the system: What's sabotaging your business software and how you can release the power to innovate*. AMACOM; 2002.
19. Womack JP. Lean consumption. *Harvard Business Review*. 2005; 83(3): 58-68.
20. Radnor Z, Boaden R. Lean in public services: Panacea or paradox? *Public Money & Management*. 2008; 28(1): 3-7.

