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Development Model of Indonesian National Health Insurance (BPJS) Flow Process at Hospital Hermina Ciruas Using Lean Hospital Approach

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This study aimed to discuss the flow of outpatient care process of Indonesian National Health Insurance (BPJS by customer perception and standards time at Hermina Ciruas Hospital using Lean Hospital approach. In order to achieve the result, we obtain empirical evidence of the outpatient service process and provide proposed improvements from in-depth interview in outpatient BPJS. In addition, we proposed qualitative by using time-motion studies with observation method and in-depth interview in outpatient BPJS. Here the research was carried out in an outpatient installation at Hermina Ciruas Hospital with data analysis using lean hospital approach (Visio software device). The limitations in the process of this study subjectivity in observation collection of inevitable data due to, the calculation of time in each related unit is carried out by the researchers themselves. The results show average patient service process time is 299 minutes with the assessment of activity value added 26 minutes with the assessment of non-value with activities 273 minutes. It's identifies waste in the outpatient service process. The findings on the processing data of outpatient services BPJS is still waste and amount of non-value added is poor. Therefore, the improvement efforts are needed for service efficiency on BPJS performance. The proposed improvements through the application of future state value stream map with, proposed blueprint of BPJS outpatient services, socialization of outpatient registration using Hermina mobile app (will get the ticket code used for activation at the queue counter), and discipline the presence of doctors.

Keywords: Lean hospital, process flow, waiting time, outpatient

1. INTRODUCTION

Based on regulation law No. 44 of 2009 on hospitals, there are intended to be health care institutions that conduct individual health services in a plenary that provides inpatient, outpatient, and emergency services. Meanwhile, a hospital still produces variations in the quality-of-service processes as well as inefficient output resulting in patient dissatisfaction. Lean term is a management system that is fully focused on efficiency, this is achieved in the long term through efforts to increase the value of customers, society, and economy to reduce costs, accelerate service time, and improving quality through the elimination of total waste [1]. An important concept in Lean is to share added and value-added values. Value-added activities are held to satisfy customers [2]. The lean principle helps in reducing defects or errors and improving process performance in the health field, it is means that reducing medical errors and increasing the utilization of resources available for better service to [3]. Lean approach through the analysis of the activation process by assessing each step to get added value or not provide added value and is a waste. [4]. Based on observation of flow process and relatively long service time ranging from registration to receiving drugs at Hermina Ciruas Hospital, which is an average of 167 minutes. Analysis of outpatient service process from patients registering at Hermina Ciruas Hospital is done on BPJS guarantee patients. Due to 83% of patients who do outpatients guarantee BPJS and 27% non BPJS patients. Therefore, by applying lean hospital principles can know the process of outpatient services to improve the efficiency of the outpatient service process at Hermina Ciruas Hospital.

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2. METHODOLOGY

This study was carried out at the outpatient installation of Hermina Ciruas Hospital in May - July 2020. By using qualitative data observation, namely problem examining with interviews also statistical calculation of the time from the outpatient process ranging taking queues to receiving drugs from outpatient installation pharmacies. The objective of this study is all about BPJS assurance patients who performed outpatient services on weekdays carried out observations at the Outpatient Installation of Hermina Ciruas Hospital. The focus of the research is on BPJS patients who will be observed and interviewed on the outpatient service process based on the patient's point of view. Data collection techniques with field surveys and interviews. Data collection using interview instruments and guidelines. Data retrieval instruments in the form of observation guidelines and interview guidelines. Observation guide in the form of observation guide activities in the unit involved with stopwatch tools to calculate time and analyze with lean hospital approach using software devices such as Ms. Visio.

3. RESULT AND DISCUSSION

A. Outpatient Service Process Flow

Figure 1 shows BPJS outpatient service process, with patient perspective obtained from observation activities conducted to patients who perform outpatient service process. In the process of outpatient services, there are units involved including outpatient registration, nurse station, poly examination, pharmacy depot, and billing/ cashier.

B. Value Stream Map (VSM)

Value Stream Map provides an effective way of creating strategies to make improvements [5]. VSM is a sequence of activities necessary to design, manufacture and deliver goods or services to customers and that includes a double flow of information and materials [6]. More specifically, it seems to reduce value-added time such as waiting times and length of stay, increasing value for patients [7]. From VSM calculation results obtained value added activities with 26 minutes and non-value added with 273 minutes. The total time of outpatient service, from registration to receiving the drug is 299 minutes. At the end of the outpatient service process is the patient receiving the drug from the pharmacy (see Figure 2)

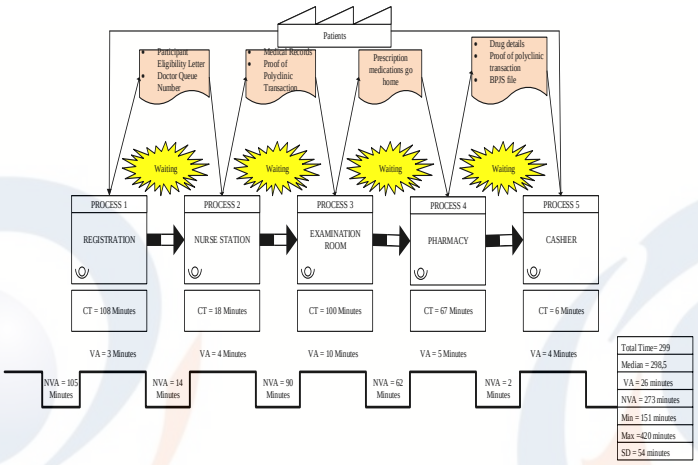

Figure 2. Value Stream Map of BPJS Patient Outpatient Care Process

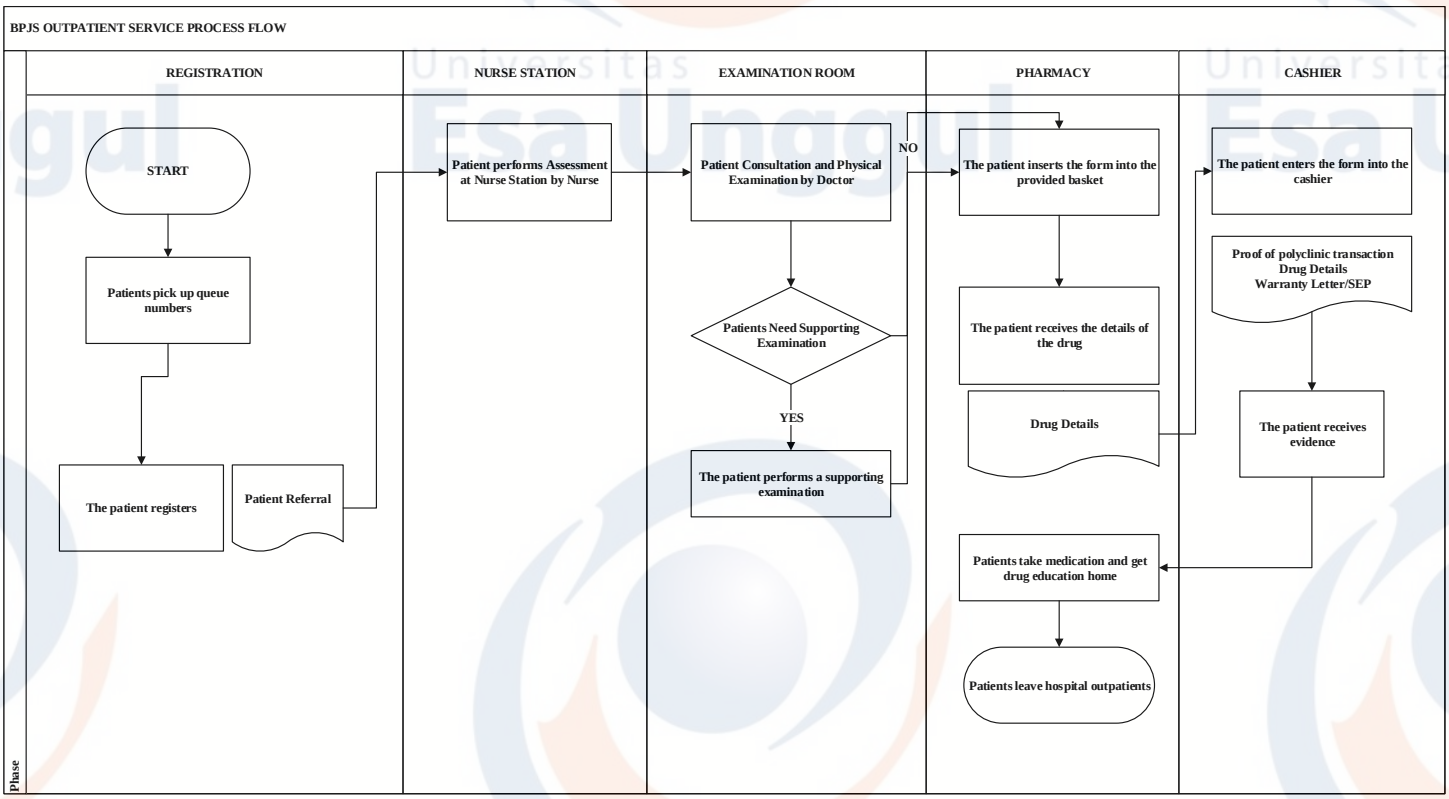

Figure 1. Flowchart of BPJS Patient Outpatient Care Process

C. Takt Time

Takt time is the estimated desired duration of the patient from each health care process activity [8]. Takt time is calculated by dividing the available working time by the number of requests per day as many as 310 patients. Thus, takt time in the outpatient service process of 93 seconds indicates that there is a problem in meeting patient demand because the cycle time is higher than takt time (shown in table 1). Takt time is calculated by dividing the available working time by the number of requests per day as many as 310 patients. So Takt time in the outpatient service process of 93 seconds indicates that there is a problem in meeting patient demand because the cycle time is higher than takt time (shown in table 1). Takt time is calculated by dividing the available working time by the number of requests per day as many as 310 patients. So Takt time in the outpatient service process of 93 seconds indicates that there is a problem in meeting patient demand because the cycle time is higher than takt time (see Table I).

Table I. Takt Time of Outpatient Service Process

No	Unit	Available Time (in Seconds)	Patient Visits Per Day	Cycle Time	Takt Time
1	Outpatient Registration	28.800		6.480	
2	Nurse Station	28.800	310	1.080	
3	Examination Room	28.800		6.000	93
4	Pharmacy	28.800		4.020	
5	Cashier	28.800		360	

From the takt time can be compared with cycle time, it can be known that the unit has not been able to meet the demand of patients so that the length of the outpatient service process, therefore it is needed improvement to support the smoothness of the process and reduce waste.

D. Value Added and Non-Value-Added Activities

Table II shows the observations begin at the starting point of observation, which is when the patient begins to register outpatient in outpatient Hermina Ciruas Hospital with Value Added (VA) and Non-Value Added (NVA).

Table II. Average time of patient activity by VA and NVA

Activity	VA/NVA	Average time	%
Outpatient Registration			
Patients pick up queue numbers	VA	1 minutes	0,3%
Patient waiting for registration call	NVA	105 minutes	35,1%
The patient performs the registration process	VA	3 minutes	1,0%
Nurse Station			
Waiting for inspection at nurse station	NVA	14 minutes	4,6%
Inspection process at nurse station	VA	4 minutes	1,2%
Examination room			
Patients waiting for a doctor's examination	NVA	90 minutes	30,2%
Patient checked by doctor	VA	10 minutes	3,3%
Pharmacy			
Patients waiting for drug details	NVA	17 minutes	5,6%
Patients waiting for medicine to come home	NVA	45 minutes	15,1%
Patients receive medication home	VA	5 minutes	1,6%
Cashier			
Patients waiting for cashier service	NVA	2 minutes	0,6%
The patient performs the process at the checkout	VA	4 minutes	1,2%
Total Average Outpatient Service Process Time Until Receiving The Drug		299 minutes	

Here, lean thinking provides benefits for hospitals including safe, effective, patient focus, on time (reducing waiting times and delays that are wrong and harmful to patients and providers, efficient (avoiding unhelpful things and waste, including from equipment, equipment, ideas, and energy) and equalization (providing quality care that does not vary). The observations showed the time required by the patient in completing the outpatient service process of 299 minutes (4 hours 59 minutes) from the patient to register until the patient received the drug from the pharmacy. This condition is still not in accordance with the standard time set by Hermina Hospital Group (HHG) which is ⩽ 1 Hour 30 Minutes. From the observation of the doctor's arrival is not in accordance with the predetermined practice schedule, this has an impact on the length of the patient's waiting time. The delay of doctors who are still more than 1 hour is pursued by approaching the doctors by reminding again their commitment in cooperation agreements with hospital management, especially related to discipline in complying with practice hours. Here the length of service time in a pharmaceutical service is caused by the presence of a delay component that causes the process to become longer. Delays are caused among others because the officer has not worked on the recipe because of other activities or worked on previous recipes. The pharmacy unit of Hermina Ciruas Hospital located in the Outpatient Installation serves inpatient prescription services, drug details, home medicine taking, and home medicine education for patients treated at Hermina Ciruas Hospital. Pharmacy depot officer in charge of outpatient consists of divided into 3 shifts where after changing hour shift as many as 5-6 people and on shift 3 as many as 2 people. Therefore, what happens in the pharmacy of Hermina Ciruas Hospital can also be due to the lack of human resources in the process of drug details in outpatients, with the increasing number of patients who are outpatients can affect the workload that impacts the quality of service.

Based on observations obtained waste is waiting or waiting for the largest outpatient registration (waiting = 35.1%), poly examination (waiting = 30.2%), and pharmaceutical depot (waiting = 20.7%). A non-value added is an action that does not add value to improve product results, services, or processes. From the calculation of table 3 can be seen that in the outpatient services BPJS patients waste variants experienced by patients, namely waiting / waiting. Activities that do not provide added value (non-value added) which is waste for patients by 91.2% are much greater than the activity that is a value added by 8.6% (see Table III)

Table III. Percentage Distribution of VA and NVA With Waste Type

Unit	Activity	VA/NVA	TypeWaste
Outpatient Registration	Patients pick up queue numbers	VA=0,3%	
	Patient waiting for registration call	NVA=35,1%	
	The patient performs the registration process	VA=1,0%	
	Total	VA= 1,3% NVA= 35,1%	*Waiting* = 35,1%
Nurse Station	Waiting for inspection at nurse station	NVA= 4,6%	
	Inspection process at nurse station	VA= 1,2%	
	Total	VA= 1,2% NVA= 4,6%	*Waiting* = 4,6%
Examination Room	Patients waiting for a doctor's examination	NVA= 30,2%	
	Patient checked by doctor	VA= 3,3%	
	Total	NVA= 30,2% VA= 3,3%	*Waiting*= 30,2%
Pharmacy	Patients waiting for drug details	NVA= 5,6%	
	Patients waiting for medicine to come home	NVA= 15,1%	
	Patients receive medication home	VA= 1,6%	
	Total	VA= 1,6% NVA= 20,7%	*Waiting*= 20,7%
Cashier	Patients waiting for cashier service	NVA= 0,6%	
	The patient performs the process at the checkout	VA= 1,2%	
	Total	NVA= 0,6% VA= 1,2%	*Waiting*= 0,6%
	Conclusion	VA= 8,6% NVA= 91,2%	The waste variant experienced by patients in the outpatient service process is waiting

Waste priority selection is done by using the Pareto diagram. The Pareto diagram is shown in pareto diagram. So, it can be concluded the scope of specific problems that require the greatest attention to the process of outpatient services with the most frequency is waiting for an outpatient registration call, therefore there needs to be corrective action on that part (see Figure 3)

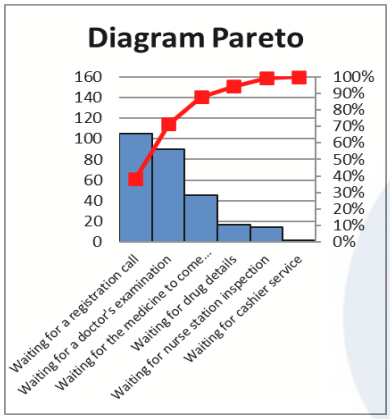

Figure 3. Pareto Diagram

After identifying waste that occurs in the process of outpatient services, the next step is to find the root cause of the problem that causes waste with Caused and Effect Method (Fishbone Diagram). Root cause analysis includes Man, Money, Machine, and Environment. (see Figure 4).

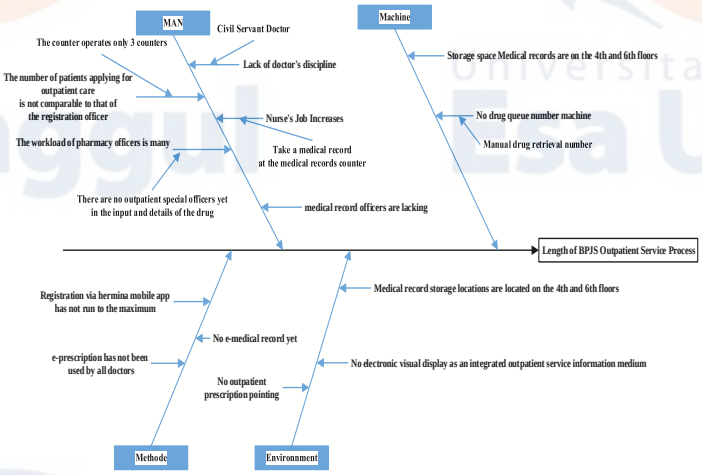

Figure 4. Analysis with Fishbone Diagram

Fishbone Diagram results are then used to create FMEA to analyze the causes in the process of outpatient services at Hermina Ciruas Hospital. The determination of these figures is subjective through discussions with the respective officers of the outpatient service process. RPN value can be used as a factor that determines the priority of handling problems of many in the FMEA table. The awarding of value is done by people who are experienced in the scope of work (the president director of the hospital, the person in charge of outpatient registration, the head of the outpatient, the head of the pharmacy, the head of the cashier). The value rating system is by following with IMRK (Institute of Clinical Risk Management) with intervals of 1-5 on the determination of severity, occurrence, and detection values.

Table 4. FMEA Results of BPJS Outpatient Care Process

Potential Failure Mode	*Potential Failure*	*Potential Cause of Effect*	*Current Controls*	*Severity*	*Occurrence*	*Detection*	RPN
Patient waiting for registration call	patients wait a long time to register	lack of registration officers	there is a SPO	4	4	3	48
Patient waiting for registration call	patients wait a long time to register	patients do not register through hermina mobile app	there is a SPO	3	2	2	12
Patients do not know the place of outpatient registration	wrong patient to register	no electronic visual display media outpatient service information	there is a SPO	2	2	2	8
Patients waiting for an examination at the nurse station	long service time	less officers at nurse station	there is a SPO	4	2	2	16

The patient does not listen to the examination call	there was a patient's commotion as he waited	many outpatient visits	there is a SPO	2	1	1	2
The doctor's arrival is not on schedule	patient waiting	discipline of the doctor in the presence of	there is a SPO	4	3	3	36
Long-time medical records officer seeks patient status	long patient waiting time	storage on the 4th and 6th floors	there is a SPO	3	3	2	18
Long-time pharmacist prepares medicine	length of service in pharmacy	limited officers	there is a SPO	3	4	3	36
The old cashier verifies	length of process at the cashier	patient files left behind	there is a SPO	2	2	2	8

The results prove in the process of outpatient services BPJS patients there is still waste (waste) and still, the amount of non-value-added activities. Then it takes improvement efforts for service efficiency. Here, is a - picture of the proposed blueprint of BPJS outpatient services and the design of the future state value stream map (see Figure 5 and Figure 6).

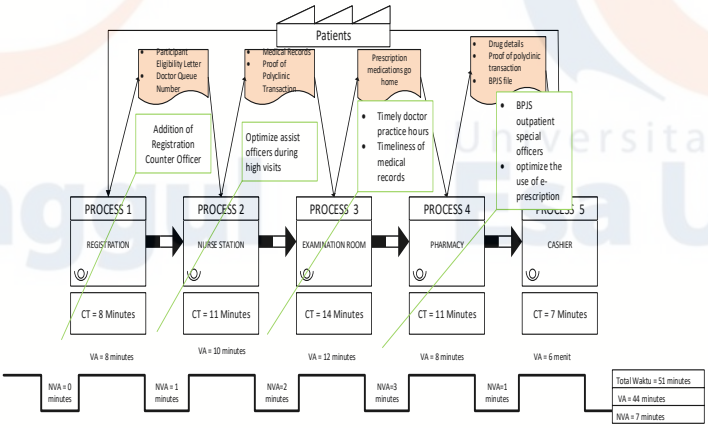

Figure 6. Future Value Stream Map of outpatient BPJS RS Hermina Ciruas

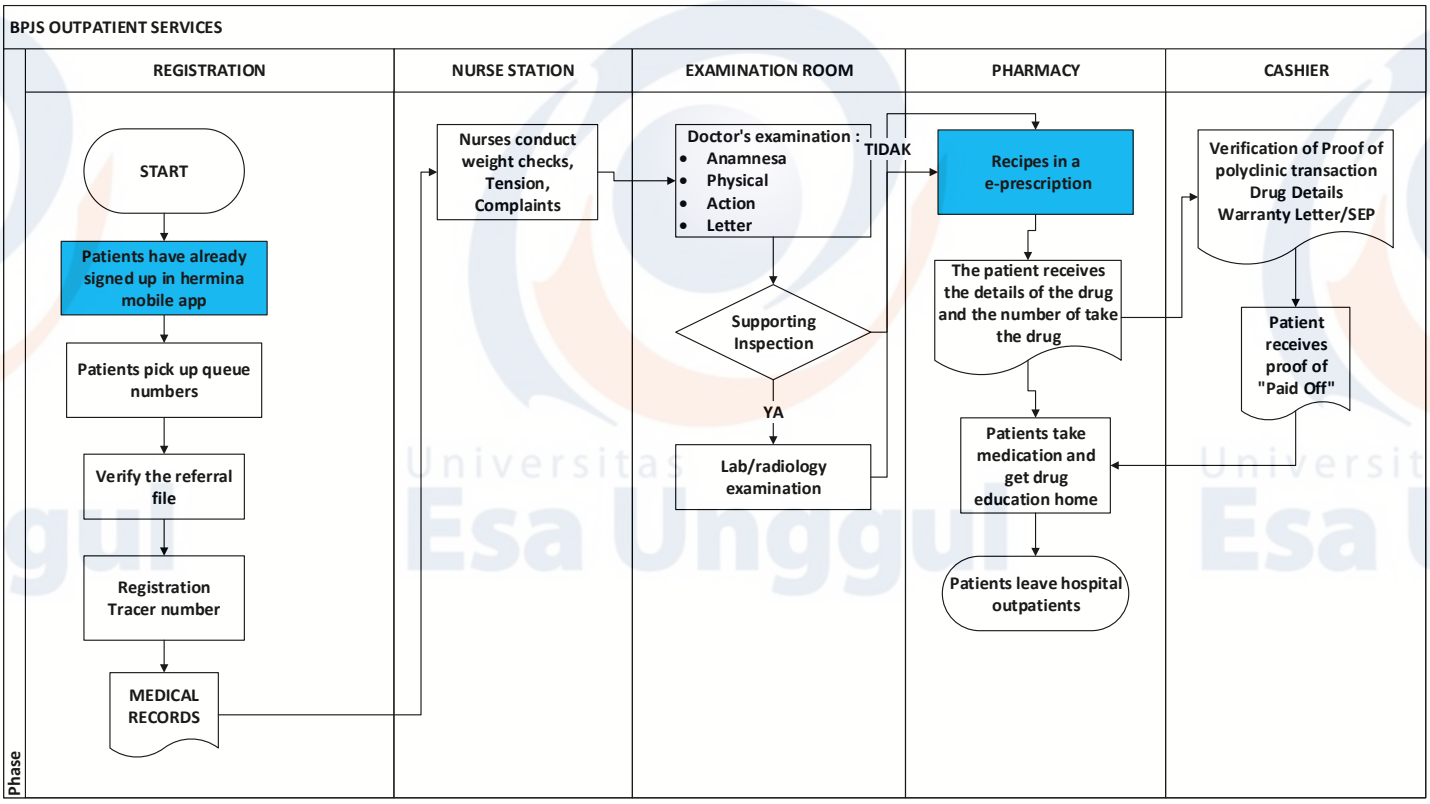

Figure 5. Proposed Blueprint for BPJS Outpatient Services

4. CONCLUSION

The value stream map shows that the total outpatient service process time is 299 minutes, value-added activities of 26 minutes (8.6%) non- value-added activities of 273 minutes (91.2%) and waste found in the outpatient service process is waiting. The largest waiting occurs in outpatient registration (105 minutes), poly examination (90 minutes), and pharmacy depot (62 minutes). Future State Value Stream Map design aims to increase Value Added to patients. After waste is eliminated, the total processing time of 51 minutes with a percentage of Value Added 86.3% so that it can be concluded can improve efficiency in outpatient Hermina Ciruas Hospital.

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