



## Analysis of Factors Affecting Waiting Time for Results of Clinical Laboratory Examinations at Medan Haji General Hospital

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### Abstract

The purpose of this study was to analyze the factors that affect the waiting time for clinical laboratory examinations at RSU Haji Medan in 2021. This study is a mixed method. Using a total sampling of 17 people, namely all laboratory workers, the main informants in this study were clinical pathology doctors, room coordinators, clinical laboratory analysts at Haji Medan General Hospital (RSU) totaling 3 people and patients totaling 3 people. 1 additional informant, namely the Management section at RSU Haji Medan. The quantitative results are that there is a relationship between the qualifications of laboratory personnel having a value of  $p = 0.000$ , at the facility  $p = 0.044$ , there is no relationship between the transportation of specimens, the value of  $p = 0.099$ , there is a relationship between pre-analytical, analytical and pre-analytical problems. post analytic  $p$  value = 0.022, there is no electrical stability relationship  $p$  value = 0.235. Based on the results of research according to information and informants about the qualifications of officers running smoothly. have to send the sample to a private laboratory. Based on these results, it was concluded that the waiting time for laboratory results at RSU Haji has reached the standard that is in accordance with the minimum service standards at the Haji General Hospital in Medan City.

## Introduction

The hospital is a form of health facility, whether organized by the government or the community, which functions to carry out basic health efforts or referral health. Based on Law No. 44 of 2009, one of the components of hospital services is the availability of supporting inspection installations related to the quality of services provided. Health service institutions provide complete individual health services that provide inpatient, outpatient, and emergency services with their own characteristics that are influenced by the development of health science, technological advances, and the socio-economic life of the community which must continue to be able to improve services that are of higher quality and affordable by the community in order to realize the highest level of health (Law of the Republic of Indonesia, 2009).

Hospital laboratory services are one of the activities in hospitals that support quality health services. This is clarified in the Decree of the Minister of Health Number 129/MENKES/SK/II/2008 concerning hospital minimum service standards, which states that hospital laboratory services are an inseparable part of the hospital health care system that is oriented to patient care, carrying out patient care services. examination of clinical specimens to obtain information about individual health, especially to support efforts to diagnose disease, cure disease, and restore health (Ministry of Health, 2013).

Timely reporting of laboratory test results is now considered an important aspect of the services provided by clinical laboratories. Faster turnaround times can make a difference to medical decisions, which is why doctors want to report laboratory results as quickly as possible. Timely reporting of laboratory results is also very important for medical decision making in the operating room and in the emergency unit/installation (Wankar, 2014).

The benefits of laboratory examination results for clinicians are to help establish and even confirm the patient's diagnosis so as to minimize unnecessary treatment/therapy. A survey conducted by the American Society for Clinical Pathology (ASCP) shows that 74% of adult respondents in America believe that at least 50% of doctors' decisions are based on laboratory results (Mulyono, 2014)

In a 2009 report by The Federal Agency for Healthcare Research and Quality in America, it was noted that as many as 28% of the 583 diagnostic errors reported anonymously by doctors were life threatening, causing permanent disability and even death. A publication in the journal *BMJ Quality & Safety* presents data that a fatal diagnostic error in the Intensive Care Unit in the United States causes 40,500 breast cancer deaths each year. Rapid laboratory results help clinicians to quickly diagnose and determine therapy (Sandra, 2013)

The delay in submitting the results of laboratory tests disrupts the work plan that has been made by the clinician and increases the risk to the patient due to delays in the administration/implementation of therapy. The laboratory work attitude and disturbances that occur during the examination can affect the waiting time for laboratory examinations (Mulyono, 2014)

According to the Minister of Health number :129/menkes/SK/II 2008 concerning Minimum Service Standards for Hospitals, the waiting time for laboratory service results is 140 minutes. The delay in the results of laboratory tests that are submitted to the clinician causes the clinician to work inefficiently, disrupts the work plan that has been made and increases the risk to the patient due to delays in administering or implementing therapy (KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR : 129/Menkes/SK/II/2008, 2008)

The results of laboratory tests may vary. The causes of variations in laboratory results are broadly influenced by the following factors: (Amanah, 2017) (1) Taking specimens, such as: anticoagulants, patient physiological variations (fasting and not fasting, age, sex, physical exercise, medication, pregnancy, tobacco consumption), method of collection, and contamination; (2) Changes in specimens, such as: temperature, pH, lysis, old blood clots are not separated from the serum. Changes can occur in the laboratory or during delivery to the laboratory; (3) Personnel, personnel factors that can cause large variations in laboratory results, for example: administrative errors, being confused with other patients, copying errors in the results form, reading errors, counting errors, technical errors in examination procedures; (4) Laboratory infrastructure and facilities, for example: electricity interruption, clean water, temperature does not match the temperature recommended for the determination of the test, distilled water with a pH that is not neutral, reagents are not good, impure, damaged or expired, standard materials are lacking good or not, the equipment (photometer, pipette) is not accurate; (5) Systematic error, which is related to the method of examination (tools, reagents); (6) Random error (random error). Variations in results are unavoidable if consecutive examinations are carried out on the same sample even though the examination procedure is carried out carefully; (7) The waiting time for the examination of laboratory results depends on the number of staff, equipment, and special laboratory design, but also depends on how quickly the sample can reach the laboratory and how quickly the test results reach the doctor. Because reporting of results can be done electronically, the only limitation that remains is the speed with which specimens reach the laboratory. Despite using mechanical specimen delivery, the distance of the laboratory is still a big obstacle to get a very fast waiting time (Amanah, 2017)

According to the Decree of the Minister of Health of the Republic of Indonesia No. 298 of 2008 that a health laboratory must have a head / person in charge and staff who meet the qualifications according to their duties and positions. Laboratory workers carry out examinations to provide information to doctors so that they can be used in treating patients. Therefore, laboratory workers play an important role in the healing process of patients' illnesses ("Keputusan Menteri Kesehatan Republik Indonesia. No 298/Menkes/SK/III/2008," 2008)

According to the Decree of the Minister of Health of the Republic of Indonesia No. 298, the Health Laboratory must have the necessary facilities and equipment for the implementation of activities. as well as the time required for transportation to the laboratory, the time of transportation within and between laboratories, the time after completion of the analysis until the reporting of examination results are factors that affect the length of waiting time for laboratory examinations (Organisasi et al., 2013)

Clinical Pathology Laboratory services go through three stages, namely pre-analysis, analysis and post-analysis. The existence of problems in these three stages causes the waiting time for laboratory results to be slower which leads to diagnostic and therapeutic decisions by a doctor (Chairlan, 2011)

The laboratory must have a generator for energy backup in the event of a power outage. If the laboratory uses instrumentation, the stability of the electric current must be considered. This is because the electric current greatly affects the performance of instrumentation that has high sensitivity. Therefore, it is necessary to consider using a stabilizer or uninterruptible power supply (UPS) in addition to isolated ground circuits and electrical installations that meet technical requirements (Hadi, 2017)

Research on the impact of delays in laboratory examination results on the administration/implementation of therapy has been carried out Mulyono, 2014), namely: (1) The delay in the results of laboratory tests causes the clinician to formulate temporary care for the patient and will continue when the results of laboratory tests are available; (2) The delay in making decisions by the clinician increases the amount of time the patient's condition is uncertain, such as an increased risk of adverse events.

Adverse event is an event that results in unexpected injury to the patient due to an action (commission) or due to inaction (omission), not due to "underlying disease" or the patient's condition. Examples such as system failure, inadequate resources, human resource errors, poor communication and can also be caused by errors in diagnosing, failure to diagnose, delay in diagnosing or delaying in providing treatment, failure to follow up on previous results.(Komite Keselamatan Pasien Rumah Sakit, 2015)

Mulyono's research (2014), on the effect of waiting time for laboratory examinations on therapeutic decisions in inpatients at Dr. Hospital. Oen Solo Baru 2014 showed that the waiting time for laboratory examinations at Dr OEN SOLO Baru Hospital far exceeded the Minimum Service Standards of the Ministry of Health of the Republic of Indonesia with the average total waiting time for laboratory examinations from the plebotomi process in the room until the doctor gave instructions was 309.00 minutes, the longest time occurred at the stage after the results were received in the room until the doctor gave instructions with an average of 195.00 minutes, due to results that were not submitted during the next doctor's visit. Disturbances that occur during the examination duration are only about 1 minute but interfere with the concentration of the laboratory assistant so that it is prone to errors in measurement, recording and interpretation of results (Margaretha, 2014)

Research by Betti Rosita Khairani (2018), regarding the analysis of the length of time for laboratory services at the West Pasaman Regional General Hospital shows that the laboratory service time of the West Pasaman Hospital has met the time standard set by the Decree of the Minister of Health of the Republic of Indonesia Number 129/MENKES/SK /II/2008 ( $\leq 140$ )

minutes) which is 33.94 minutes for hematology examination, 83.92 minutes for clinical chemistry examination and 98 minutes for hematology and clinical chemistry examination. The stages that contribute to the length of time for laboratory services for hematological examinations are in the pre-analytical stage, as well as for hematology and clinical chemistry examinations are in the analytical stage (Rosita & Khairani, 2018)

Based on the initial survey obtained at Haji Medan General Hospital, the researchers found that there was a problem with waiting time for laboratory examinations. Data in the laboratory regarding the response time of outpatients surveyed in January 2020, found as many as 110 patients (29.8%) with a response time of more than 140 minutes. Meanwhile, according to the Minister of Health number :129/menkes/SK/II 2008 concerning Minimum Service Standards for Hospitals, the waiting time for laboratory service results is 140 minutes. The delay in the results of these laboratory tests can cause the clinician to formulate a temporary treatment/therapy for the patient. Based on the results of an interview with one of the doctors at RSU Haji Medan said the waiting time for the results of laboratory tests is very important for clinicians to help enforce and even confirm the patient's diagnosis so that this can minimize unnecessary treatment/therapy, if the waiting time for laboratory results is very important. because if the old laboratory results will cause the clinicians to not be able to confirm the patient's diagnosis, for some diseases whose exact diagnosis must wait for the clinical laboratory results so that the clinician provides temporary treatment until the laboratory results are completed. And I also interviewed one of the DPJP doctors who said that the waiting time for laboratory results was very important because if the waiting time was long it would cause problems in our handling of patients, for example, if the patient wanted a transfusion or not, if the HB examination did not come out it would cause problems. This study aims to analyze the factors that affect the waiting time for clinical laboratory examinations at RSU Haji Medan in 2021

Based on the existing problems, the researchers are interested in researching "Analysis of factors that affect the waiting time for the results of clinical laboratory examinations at RSU Haji Medan in 2021"

## Methods

This research is a type of research used in this study is a quantitative and qualitative research (mixed method). This research was conducted at RSU Haji Medan. The population in this study is the population of this study are all clinical laboratory officers at RSU Haji Medan in 2021 with a total of 17 people. The data used are primary, secondary, and tertiary data. Data analysis was performed univariately, bivariately with Chi-Square test, and multivariate using multiple logistic regression test with 95% confidence level ( $\alpha=0.05$ )

## Results and Discussion

### Respondents' Characteristics

Based on the results of the study, it shows that the majority of respondents, the early elderly (46 - 55) are 9 people (52.9%), early adults (18-35) are 4 people (23.5%), and Late Adults (36 - 45) as many as 4 people (23.5%). Most of the respondents were female as many as 13 people (76.5%) and 4 people were male (23.5%).

Most of the respondents in this study with the last education of high school as many as 3 people (17.6%), the last education of D - III Analysis as many as 12 people (70.6%), and the last education of S1 as many as 2 people (11.8%).

And in the respondent's position, most of the research respondents were as laboratory staff as many as 11 people (64.7%), as analysts as many as 4 people (23.5%), as laboratory administrators as many as 1 person (5.9%) and the last as laboratory administration as much as 1 person (5.9%).

## Univariate Analysis

Based on the results of the study, it was found that the respondents regarding the qualifications of laboratory officers at RSU Haji Medan with the category of meeting the qualifications and waiting time for laboratory examinations according to standards were 13 respondents (76.5%), and waiting time for laboratory examinations that did not reach the standard did not exist, while the statement of respondents about the qualifications of laboratory officers at RSU Haji Medan with the category of not meeting the qualifications with no waiting time for laboratory examinations according to the standard and waiting time for laboratory examinations that did not reach the standard were 4 respondents (23.5%).

The results of the statistical test with Chi square obtained  $p\text{-value} = 0.000$  which means that there is an influence of laboratory staff qualifications on waiting time for laboratory examinations at RSU Haji in 2021. So  $H_1$  is accepted and  $H_0$  is rejected.

Based on the results of respondents' research on facilities and equipment at RSU Haji Medan in 2021 with good categories and waiting time for laboratory examinations according to standards as many as 13 respondents (76.5%) and waiting time for laboratory examinations that do not reach standards as many as 2 (11.8%), and in categories that are not good and the waiting time for laboratory examinations does not reach the standard there are as many as 2 people (11.8%).

Based on the results of the respondents' research on specimen transportation in good category, 11 people (64.7%) assessed the waiting time for laboratory examinations according to the standard as many as 10 respondents (58.8%) and those who assessed the waiting time for laboratory examinations that did not reach the standard were 1 respondent (5.9%). Meanwhile, respondents' statements regarding the transportation of specimens in the poor category and waiting time for laboratory examinations according to standards were 3 respondents (17.6%) and waiting times for laboratory examinations that did not reach the standards were 3 respondents (17.6%).

The results of statistical tests with Chi square obtained  $p\text{-value} = 0.099$  which means that there is no influence of specimen transportation on waiting time for laboratory examinations at RSU Haji Medan in 2021.

Based on the results of the respondent's research on respondents about pre analytic, analytic, and post analytic problems at RSU Haji Medan, 4 respondents (23.5%) assessed that there were 3 pre analytic, analytic and post analytic problems (17.6%) ) assessed that the waiting time for laboratory results did not reach the standard and there was 1 respondent (5.9%) who assessed that the waiting time for laboratory results was in accordance with the standard. Then from 13 people (76.5%) who assessed that there were no pre-analytical, analytical and post-analytic problems there were 1 person (5.9%) with the category of waiting time not reaching the standard and as many as 12 people (70.6%) with the category waiting time according to standard does not experience pre analytic, analytic and post analytic problems.

The results of statistical tests with Chi square obtained  $p\text{-value} = 0.022$  which means that there is an influence of pre-analytical, analytical, and post-analytic problems on the waiting time for laboratory examinations at RSU Haji Medan in 2021.

The results of statistical tests with chi square obtained  $p\text{-value} = 0.044$  which means that there is an influence between facilities and equipment on waiting time for laboratory examinations at RSU Haji Medan in 2021.

Based on the results of the research, respondents said that the electrical stability was good with waiting time for laboratory examinations that were in accordance with the standard as many as 13 respondents (76.5%) and those who assessed the waiting time for laboratory examinations that were not up to standard were 3 (17.6%). Meanwhile, respondents who stated that electrical

stability was not good with time wait for laboratory tests that do not reach the standard as many as 1 respondent (5.9%).

The results of statistical tests with Chi square obtained p-value = 0.235 which means that there is no effect of electrical stability on waiting time for laboratory examinations at RSU Haji Medan in 2021.

Table 1. Frequency Distribution of Respondents Based on Qualifications of Laboratory Officers, Transport of Specimens, Pre-Analytical, Analytical, and Post-Analytical Problems, Electrical Stability

No.	Waiting Time for Laboratory Examination	f	%
1.	By standard	13	76,5
2.	Not reaching standards	4	23,5
<b>Sum</b>		<b>17</b>	<b>100,0</b>
No.	Laboratory Officer Qualifications	f	%
1.	Meet the Qualifications	13	76,5
2.	Not Qualified	4	23,5
<b>Sum</b>		<b>17</b>	<b>100,0</b>
No.	Facilities and Equipment	f	%
1.	Good	15	88,2
2.	Less good	2	11,8
<b>Sum</b>		<b>17</b>	<b>100,0</b>
No.	Specimen Transport	f	%
1.	Difficult	11	64,7
2.	Easy	6	35,3
<b>Sum</b>		<b>17</b>	<b>100,0</b>
No.	Laboratory Electrical Stability	f	%
1.	Good	16	94,1
2.	Less good	1	5,9
<b>Sum</b>		<b>17</b>	<b>100,0</b>

Based on the research, it shows that the results of statistical tests using the chi-square test obtained p-value for the results of statistical tests with Chi-square obtained p-value = 0.000 which means that there is an influence of laboratory staff qualifications on waiting time for laboratory examinations at RSU Haji in 2021. So that H1 is accepted and H0 is rejected. The results of statistical tests with chi square obtained p - value = 0.044 which means that there is an influence between facilities and equipment on waiting time for laboratory examinations at RSU Haji Medan in 2021.

The results of statistical tests with Chi square obtained p-value = 0.099 which means that there is no influence of specimen transportation on waiting time for laboratory examinations at RSU Haji Medan in 2021.

The results of statistical tests with Chi square obtained p-value = 0.022 which means that there is an influence of pre-analytical, analytical, and post-analytic problems on waiting time for laboratory examinations at RSU Haji Medan in 2021. Statistical test results with Chi square obtained p-value = 0.235 which means that there is no effect of electrical stability on the waiting time for laboratory examinations at RSU Haji Medan in 2021.

Table 2. The Effect of Laboratory Staff Qualifications on Waiting Time for Laboratory Examinations at RSU Haji Medan

No	Laboratory Officer Qualifications	Waiting Time for Laboratory Examination				Sum		p-value
		Not reaching standards		By standard				
		f	%	f	%	F	%	
1	Meet the Qualifications	-	-	13	76,5	13	100,0	0,000
	Not Qualified	4	23,5	-	-	3	100,0	
No	Facilities and Equipment	Waiting Time for Laboratory Examination				Sum		p-value
		Not reaching standards		Not reaching standards				
		f	%	f	%	F	%	
1	Good	2	11,8	13	76,5	88,2	100,0	0,001
2	Less Good	2	11,8	-	-	2	100,0	
No	Specimen Transport	Waiting Time for Laboratory Examination				Total		p-value
		Not reaching standards		Not reaching standards				
		f	%	f	%	F	%	
1	Difficult	1	5,9	10	58,8	11	64,7	0,099
2	Easy	3	17,6	3	17,6	6	35,3	
No	Pre-Analytic, Analytics, and Post Analytics Issues	Waiting Time for Laboratory Examination				Total		p-value
		Not reaching standards		Not reaching standards				
		f	%	f	%	F	%	
1	Available	3	17,6	1	5,9	4	23,5	0,022
2	Not available	1	5,9	12	70,6	13	76,5	
No	Laboratory Electrical Stability	Waiting Time for Laboratory Examination				Sum		p-value
		Not reaching standards		Not reaching standards				
		f	%	f	%	F	%	
1	Good	3	17,6	13	76,5	16	94,1	0,235
2	Less Good	1	5,9	-	-	1	5,9	

### Qualitative Results

At the time of doing the research, I saw that the hospital policy was in accordance with the standards set by the Minister of Health, namely the Minister of Health (Menkes) number :129/menkes/SK/II 2008 regarding hospital minimum service standards that the waiting time for laboratory service results was 140 minutes (routine blood and blood chemistry). Although in recent months there have been delays in laboratory results because at this time the reagents are empty and laboratory personnel have to deliver them to private laboratories (5)

Laboratories must plan service patterns correctly and standardized, which refers to the guidelines for the Regulation of the Minister of Health of the Republic of Indonesia number 411/Menkes/PER/III/2010 concerning clinical laboratories or ISO 15189 for medical laboratories. (19)

Personnel factors can cause large variations in laboratory results for example: administrative errors, being confused with other patients, copying errors in the results form, reading errors, counting errors, technical errors in examination procedures (5)

At the time of doing the research, the researchers saw that the laboratory equipment at the Haji Hospital was in accordance with existing standards, but when the interview was conducted, the coordinator of the laboratory room said that the factor that affected the waiting time for laboratory results was the machine, both the machine in the examination and the printing machine for the results. laboratory.

To determine the stability of electricity where the hospital must prepare a generator for energy backup in case of a power outage at any time. If the laboratory uses instrumentation, the stability of the electric current must be considered. This is because the electric current greatly affects the performance of instrumentation that has high sensitivity.

The laboratory must have a generator for energy backup in the event of a power outage. If the laboratory uses instrumentation, the stability of the electric current must be considered. This is because the electric current greatly affects the performance of instrumentation that has high sensitivity. Therefore, it is necessary to consider using a stabilizer or uninterruptible power supply (UPS) in addition to isolated ground circuits and electrical installations that meet technical requirements. (12)

Personnel factors can cause large variations in laboratory results for example: administrative errors, being confused with other patients, copying errors in the results form, reading errors, counting errors, technical errors in examination procedures. Various efforts from hospitals in improving the best service, one of which is the time of laboratory results and one of the supporters of waiting time for laboratory results is facilities and infrastructure.

The laboratory sub-section of the Medan Haji General Hospital consists of clinical pathology and anatomical pathology laboratories. The clinical pathology laboratory provides haematological examination facilities (complete blood count, blood type, routine blood), clinical chemistry examination (kidney examination, fat, liver function test), immunoserology, urinalysis and stool examination, while the anatomical pathology laboratory provides tissue and TB. Patients served are from outpatients at Haji Medan Hospital or patients from other hospitals who bring a cover letter from a doctor. In this sub-section there is a blood bank that serves to provide blood. In providing blood, the Medan Haji General Hospital laboratory cooperates with the Indonesian Red Cross (PMI).

Constraints that are often faced by laboratory workers that affect the waiting time for laboratory results are specimen collection, such as: anticoagulants, physiological variations of patients (fasting and not fasting, age, gender, physical exercise, medication, pregnancy, tobacco consumption), method of collection, and contamination. Changes in specimens, such as: temperature, pH, lysis, old blood clots are not separated from the serum. Changes can occur in the laboratory or during delivery to the laboratory. Personnel, personnel factors that can cause large variations in laboratory results for example: administrative errors, being confused with other patients, copying errors in the results form, reading errors, counting errors, technical errors in examination procedures.

The vacancy of Reagents at the Medan City Hajj RSU has occurred in the last 3 months this is because the Hajj Hospital has been fully regulated by the North Sumatra Regional Government but for funding there is still part of the APBD of the Haji General Hospital and part of the

government, so that the KSO occurs. has not been paid, causing the reagents in the laboratory to be empty for 3 months. In early 2021 there were a few financial problems so that the late SPO was also one of the causes of the vacancy of reagents in the laboratory. However, in early April, financial problems at RSU Haji Medan City had If the KSO has been completed, it has also been paid for, so the reagents in the laboratory are available.

The vacancy of the reagents can be handled very quickly by the laboratory personnel, the laboratory staff at the Medan Haji General Hospital are very competent, this I saw when there was an empty tool and had to be transferred to a private laboratory, the officers immediately alerted so that the laboratory results quickly came out and arrived at the laboratory. doctor who treats the patient.

### **Waiting Time for Clinical Laboratory Examination at RSU Haji Medan in 2021**

Waiting time for laboratory results is a combination of the time when the request for laboratory examination arrives until the results are received by the doctor in charge of the patient. Laboratory service time, namely the time of sampling, processing time, until the results are experienced by the person in charge of the laboratory. Waiting time for laboratory results can be calculated in minutes and is greatly influenced by various things, both regarding the amount of energy and other supporting components. The waiting time for the results is said to be on time or not late if the time required does not exceed the existing standard average time. According to the Minister of Health (Menkes) number :129/menkes/SK/II 2008 regarding hospital minimum service standards, the waiting time for laboratory service results is 140 minutes (routine blood and blood chemistry) (KEPUTUSAN MENTERI KESEHATAN REPUBLIK INDONESIA NOMOR : 129/Menkes/SK/II/2008, 2008)

Based on the data obtained at the Medan Haji General Hospital, the researchers found that there was a problem with waiting time for laboratory examinations. This is because the reagents in the laboratory at the Haji Hospital have been empty in recent months so that the laboratory staff sends them to a private laboratory, while the examinations carried out by private laboratories are fast, but the results are sometimes long, so the waiting time for laboratory results is sometimes more than standard. < 140 minutes.

### **Laboratory Officer Qualifications**

According to the Decree of the Minister of Health of the Republic of Indonesia No. 298 of 2008 that Health Laboratories must have a head / person in charge and staff who meet the qualifications according to their duties and positions. (6), which includes educational background that is in accordance with applicable requirements, having experience working in a health laboratory for at least 3 years, attending training in both management and laboratory technical fields. All workers in the unit work to provide services in accordance with the organizational structure that has been determined by the president director Each element of the workforce has main duties and functions in accordance with the organizational structure of the diagnostic laboratory installation

### **Facilities and Equipment**

General equipment and services in the laboratory of the Haji General Hospital in 2021 are in accordance with standard facilities, where the Medan Haji General Hospital provides facilities in the laboratory consisting of clinical pathology and anatomical pathology laboratories. The clinical pathology laboratory provides haematological examination facilities (complete blood count, blood type, routine blood), clinical chemistry examination (kidney examination, fat, liver function test), immunoserology, urinalysis and stool examination, while the anatomical pathology laboratory provides tissue and TB.

## **Specimen Transport**

How quickly the sample can get to the laboratory and how quickly the test results reach the doctor. Because reporting of results can be done electronically, the only limitation that remains is the speed with which specimens reach the laboratory. Despite using mechanical specimen delivery, the distance of the laboratory is still a big obstacle to get a very fast waiting time. The interval from the point of collection of specimens to the collection of specimens, as well as the time required for transportation to the laboratory, transportation time within and between laboratories, the time after completion of analysis until reporting of examination results are factors that affect the length of waiting time for laboratory examinations (Stotler & Kratz, 2012)

This is coupled with empty reagents in the last few months, making laboratory results take a long time to arrive because they must first collect which specimens will be sent to a private laboratory.

## **Pre-Analytical, Analytical and Post-Analytical Problems**

Pre-analytic is the activity of registering patients using barcodes, providing information to patients, taking samples and handling them. Analytical activities include preparation of equipment, conducting sample analysis and validation of examination results as well as Post-analytic, namely reporting the results of laboratory examinations, while post-analytic is reading the results, namely by calculating, measuring, identifying and assessing must be correct. wrong transcript, writing is clear, there is no trend of results (Stotler & Kratz, 2012).

In this study, the problem that often occurs in pre-analysis is patient preparation, in general laboratory workers often complain about patient preparation, namely where the sampling time is often the patient is not cooperative, for example if the patient is required to urinate but the patient does not want to urinate. , then the patient has been advised to fast but arrives at the laboratory the patient forgets to fast, it becomes one of the obstacles for the laboratory staff so that the laboratory results that should have been read by the doctor on the day / hour specified become late.

The problem is in the analysis, namely where in the past 3 months the reagents at the Haji Empty Hospital so that laboratory officers at the Medan City Hajj RSU have to work together with laboratories in the private sector so that the officers do not carry out sample analysis and validation checks, the officers only wait for the results that have been obtained. send it from a private laboratory.

## **Electrical Stabilization**

Laboratory infrastructure and facilities, for example: electricity supply disturbances, clean water, temperature not in accordance with the recommended temperature for the determination of the test, distilled water with a pH that is not neutral, reagents that are not good, impure, damaged or expired, standard materials are not good or not available, inaccurate equipment (photometer, pipette) can cause variations in laboratory results (Amanah, 2017)

Therefore, the laboratory must have a generator for energy backup in case of a power outage at any time. If the laboratory uses instrumentation, the stability of the electric current must be considered. This is because the electric current greatly affects the performance of instrumentation that has high sensitivity. Therefore, it is necessary to consider using a stabilizer or uninterruptible power supply (UPS) in addition to isolated ground circuits and electrical installations that meet technical requirements (Anwar, 2017).

## **Conclusion**

For Health Agencies Knowledge does not affect the choice of place of delivery in the Work Area of the Alafan Health Center, Simeulue Regency, Aceh Province in 2019. For Laboratory

Officers For laboratory officers to improve the quality of services by continuing to improve knowledge, abilities and skills in providing services to patients so as to avoid factors -factors that can slow down waiting time for laboratory tests. Further Research The results of this study are expected to be the basis for further research with more in-depth interviews on the factors that can affect the waiting time for the results of clinical laboratory examinations.

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