



## Factors related to waiting time for medical examination at outpatient department – 108 Military central Hospital

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### ABSTRACT

**Objectives:** Describe factors related to waiting time for examination at the outpatient department - 108 Military Central Hospital. **Research participants and methods:** Cross-sectional descriptive study analyzing 800 patients on medical examination from April 2022 to December 2022. **Results:** The longest waiting time for medical examination for people under 18 years old was  $283.2 \pm 173.9$  minutes, and the shortest was for people over 60 years old:  $189.5 \pm 131.8$  minutes. Among the participants, the longest medical examination time was  $253.7 \pm 111.8$  minutes, the shortest was the health insurance group:  $183.2 \pm 131.4$  minutes. The relationship between waiting time for medical examination and the day of medical examination, Tuesday was the day with the highest number of medical examinations (190 patients) and also the day with the longest medical examination time:  $245.1 \pm 132.9$  minutes (4 hours 05 minutes). Waiting time for medical examination is, as a rule, the more clinical tests are performed, the more waiting time for medical examination increases. For 4 tests, the longest waiting time for medical examination was  $331.3 \pm 122.6$  minutes (5 hours 31 minutes), and no test had the shortest time of  $50.7 \pm 772.9$  (51 minutes). The waiting time for medical examination among the group of patients who had blood tests, ultrasound, X-ray, functional diagnosis, and gastrointestinal endoscopy was longer than the group who did not perform these techniques. **Conclusion:** Factors are statistically significantly related to patient waiting time for examination including age, education level, occupation, mobility, number of medical examinations, hospital distance, time to register for medical examination and treatment, and number of paraclinical tests.

**Keywords:** Waiting time for examination, outpatient department, 108 Military Central Hospital

### INTRODUCTION

To improve the quality of service in medical examination and treatment, the Ministry of Health issued Decision No. 1313/QĐ-BYT (2013) <sup>1</sup>, issued Instructions for medical examination procedures at the

hospital's medical examination department. Organizing the medical examination process effectively can shorten the patient's examination time (NB), especially the waiting time. The assessment of medical examination time is an important criterion,

which has been mentioned in several recent studies <sup>2,3</sup>. At 108 Military Central Hospital, the issue of improving the medical examination and treatment process has received special attention from the Party Committee, the Hospital Board of Directors, and the leaders and commanders of the Center for Outpatient and Treatment on Demand. with the patient-centered motto. In recent years, the Department of Outpatient (C1-1A) has made many improvements such as improving infrastructure, information technology, and behavioral culture creating favorable conditions and shortening examination time. illness for sick people. However, until now there have been very few studies showing factors that affect patient waiting time for examination, so we conducted this study with the goal: Describe waiting time for examination at the medical examination department and related factors at 108 Military Central Hospital.

## RESEARCH PARTICIPANTS AND METHODS

### Research participants

**Participants:** Patients on the medical examination at the outpatient department - 108 Military Central Hospital.

*Selection criteria:* The medical examination cycle is completed in 1 day. Participants and relatives agreed to participate in the study.

*Exclusion criteria:* Medical examiners need to perform tests and paraclinical tests that must be scheduled for other days such as MRI, CT scanner, and microbiology

**Research time and location:** April to December 2022 at Department of outpatient Examination, 108 Military Central Hospital.

**Research design:** Cross-sectional description.

Model calculation formula:

$$n = C * \frac{\sigma^2}{\mu^2}$$

Where: n is the sample size.

C is a constant related to type I and II errors (Choose  $\alpha = 0.05$  and  $\beta = 0.20$  then  $C = 7.85$ )

$\mu$ : expected error.

$\sigma$ : standard deviation of the population or a previous study.

Applying to research, we choose:

$\mu$ : expected error 0.05. The goal is to comply with the provisions of Decision 1313/QĐ-BYT dated April 22, 2013 <sup>1</sup>, of the Ministry of Health, patients undergo a clinical examination and perform 2 of 3 techniques (coordinated with both testing and diagnostic imaging), or functional tests and investigations) is less than 3 hours 30 minutes (= 210 minutes). Therefore  $\mu = 210 * 5\% = 10.5$ . Therefore,  $\mu = 10.5$

$\sigma$ : standard deviation according to research by Tran Thi Quynh Huong <sup>4</sup> is 100 minutes.

Substituting into the formula to calculate:  $n = 712$  research participants.

Choose an additional 10% in case the patient gives up or answers with insufficient content.

The study had 800 participants participating in the study.

How to choose a sample: Choose a convenient sample:

At the end of each day, the research team relies on the medical examination

and treatment management software of the Outpatient Department to get a list of suitable research participants according to the selection criteria.

Take until the expected data is complete.

**Data collection:** Based on Decision 1313/QD-BYT dated April 22, 2013<sup>1</sup>, of the Ministry of Health on Guidance on medical examination procedures at the hospital's medical examination department<sup>1</sup>.

- Simple clinical examination time: The average examination time is 2 hours, if there is an additional paraclinical technique: The average examination time is less than 3 hours.

- Clinical examination with 02 additional paraclinical techniques: Average examination time is less than 3.5 hours.

- Clinical examination with 3 additional paraclinical techniques: Average examination time is less than 4 hours.

- Examination volume: each examination room strives to examine a maximum of 35 patients/8 hours.

**Measurements:** Characteristics of research participants regarding personal

identity and some characteristics related to medical examination conditions such as distance, time.

Measure the periods in the medical examination cycle that patients have gone through using the medical examination and treatment management software system. Waiting time for examination is the total time from when the patient gets their order number to when they complete receiving the medicine.

### Data analysis

Data were entered into Excel software, then analyzed and verified using SPSS software version 22.0. Statistical algorithms used: descriptive statistics (mean, standard deviation); Independent – Samples T-test to compare variables in 2 independent groups, and One-Way ANOVA test with variables in 2 independent groups with statistical significance determined when  $p < 0.05$

**Research ethics:** The project was approved and assigned the task of implementing the hospital science and technology project in 2022 (Decision No. 1616/QD-BV dated May 4, 2022, of the Hospital Director)

## RESULTS

**Table 1. Relationship between medical examination time and patient characteristics (n = 800)**

Characteristic	Classify	n	Mean ± SD	p
Sex	Male	403	215.3 ± 137.3	0.984
	Female	397	215.5 ± 124.3	
Age group	18 years old or younger	6	283.2 ± 173.9	0.000
	From 19 to 60 years old	490	230.6 ± 127.3	
	Over age 60	304	189.5 ± 131.8	

Characteristic	Classify	n	Mean ± SD	p
Subject of medical examination	Active soldiers	218	230.4 ± 135.2	0.000
	Health insurance	363	183.2 ± 131.4	
	Health Services	219	253.7 ± 111.8	
Job	Active soldiers	218	230.4 ± 135.3	0.000
	Retired with health insurance card	201	163.0 ± 142.1	
	Farmers, fishermen	13	265.5 ± 95.6	
	Workers and Employees	49	232.6 ± 106.8	
	Business	33	233.1 ± 97.5	
	Other occupations	286	233.4 ± 118.0	

Table 1 shows that there is no difference between men ( $215.3 \pm 137.3$  minutes) and women ( $215.5 \pm 124.3$  minutes) in terms of medical examination time, with  $p > 0.05$ . Among the age group, the medical examination time for people under 18 years old is the longest at  $283.2 \pm 173.9$  minutes; the shortest is for the age group over 60:  $189.5 \pm 131.8$  minutes; the difference is statistically significant with  $p < 0.001$ . Among the three hospital participants, the medical service patient's waiting time for medical services was the longest at  $253.7 \pm 111.8$  minutes, the shortest was the health insurance group at  $183.2 \pm 131.4$  minutes, this difference is significant. Statistically significant with  $p < 0.001$ . In the occupational group, the waiting time for KB of the group of farmers and fishermen is the longest at  $265.5 \pm 95.6$  minutes, the shortest is the group of retirees with health insurance cards:  $163.0 \pm 142.1$  minutes, this difference is statistically significant with  $p < 0.001$ .

**Table 2. Relationship between medical examination time frame and medical examination registration time frame and medical examination completion time frame (n = 800)**

Characteristic	Classify	n	Mean ± SD	p
Time frame for medical examination registration	Before 7:30	495	253.8 ± 113.2	0.000
	From 7:31 a.m. to 10:30 a.m	201	203.7 ± 136.9	
	From 10:31 a.m. to 12:00 p.m	3	14.3 ± 8.5	
	From 13:30 to 16:30	101	56.0 ± 40.7	
Medical examination completion time frame	Start in the morning, finish in the morning	571	194.2 ± 82.8	0.000
	Registration in the morning, finish in the afternoon	130	429.7 ± 82.6	
	Registration in the afternoon, finish in the afternoon	99	56.2 ± 41.0	

Table 2 shows that there were differences in KB timeouts with KB registration time frames. Registering for a medical examination before 7:30 has the longest medical waiting time ( $253.8 \pm 113.2$  minutes), and registering medical examination after 10:30 has the shortest medical waiting time ( $14.3 \pm 8.5$ ). The difference in time between examination registration time frames was statistically significant, with  $p < 0.001$ .

Morning registration and examination completed in the morning accounted for the largest number and the average examination time was  $194.2 \pm 82.8$  minutes (3 hours 14 minutes). Registration in the afternoon, finished in the afternoon was the smallest number (99 NB) and the shortest time was  $56.2 \pm 41.0$  minutes. This number was mainly patients who got medicine periodically, rarely doing tests. The registration number for morning and afternoon examinations was  $429.7 \pm 82.6$  minutes (7 hours 09 minutes). If not counting the 90-minute lunch break (12:00 to 3:30), there were still 340 minutes (5 hours and 40 minutes), and this was the longest medical examination time. This difference was statistically significant, with  $p < 0.001$ .

**Table 3. Relationship between medical examination time and medical examination day of the week (n = 800)**

Characteristic	Classify	n	Mean $\pm$ SD	p
Examination day of the week	Monday	115	$215.9 \pm 139.0$	0.000
	Tuesday	190	$245.1 \pm 132.9$	
	Wednesday	173	$227.7 \pm 134.3$	
	Thursday	146	$209.0 \pm 130.5$	
	Friday	176	$176.11 \pm 109.7$	

Table 3 shows there was a relationship between the time of the medical examination and the day of the medical examination, Tuesday was the day with the highest number of medical examinations (190 patients) and also was the day with the longest medical examination time:  $245.1 \pm 132.9$  minutes (4 hours 05 minutes). This difference was statistically significant compared to medical examination times on other days.

**Table 4. Relationship between medical examination time and the number of laboratory tests (n = 800)**

Characteristic	Classify	n	Mean $\pm$ SD	p
Number of tests and clinical tests	0 paraclinical	144	$50.7 \pm 72.9$	0.000
	1 paraclinical	232	$209.0 \pm 103.7$	
	2 paraclinical	218	$256.9 \pm 108.0$	
	3 paraclinical	144	$277.7 \pm 98.2$	
	4 paraclinical	53	$331.3 \pm 122.6$	
	5 paraclinical	9	$328.0 \pm 95.7$	

Characteristic	Classify	n	Mean ± SD	p
Blood tests	No	373	149.7 ± 124.4	0.000
	Yes	427	272.7 ± 107.4	
Ultrasound	No	492	177.7 ± 128.2	0.000
	Yes	308	275.6 ± 111.3	
X-ray	No	413	181.9 ± 138.9	0.000
	Yes	387	251.1 ± 111.3	
Functional diagnosis	No	683	204.2 ± 128.9	0.000
	Yes	117	280.7 ± 123.2	
Gastrointestinal endoscopy	No	682	202.6 ± 128.9	0.000
	Yes	118	289.2 ± 117.7	

Table 4 shows The more paraclinical tests, the waiting time for medical examination increases. For 4 tests, the longest waiting time for medical examination was  $331.3 \pm 122.6$  minutes (5 hours 31 minutes), and not doing the test with the shortest time was  $50.7 \pm 772.9$  (51 minutes), this difference was statistically significant ( $p < 0.05$ ). The waiting time for surgery between the group of patients who had blood tests, ultrasound, X-ray, functional diagnosis, and gastrointestinal endoscopy was longer than the group who did not perform these techniques. The difference was statistically significant ( $p < 0.001$ ).

## DISCUSSION

**Waiting time for examination and patient characteristics:** Among the characteristics of young people, only gender was not related. Patients under 19 years old had the longest waiting time. People over 60 years old had the least waiting time for examinations, which can be prioritized by patients. Patients were the health insurance beneficiaries with the shortest waiting time for examination due to being more familiar with the examination terrain and being examined over and over again. Patients in the medical service had the longest waiting time for examination due to unfamiliarity with the terrain, and they also had to pay for testing before performing clinical tests, which took more time.

Retired patients with health insurance cards had the shortest waiting time at 163.1

minutes. Farmers and fishermen spent the most time waiting for medical examination, 265.5 minutes; They took more time to learn the examination process as well as the testing areas than other participants.

**Waiting time for examination and registration time for examination:** The waiting time for medical examination for patients who registered before 7:30 minutes was 253.84 minutes, the longest among other medical examination registration periods. Patients registered in the morning and examinations were completed during the session with the largest number. Registration ended in the afternoon with the smallest number and the shortest time. This number is mainly patients who go to get medicine periodically and do not do tests. The registration number for the morning examination, ended in the afternoon, if

we subtract the 90-minute lunch break, there were still 340 minutes (5 hours and 40 minutes), and was the longest medical examination time. The long wait related to this examination registration time was the same as at Vinh Phuc Provincial General Hospital <sup>2</sup>.

The study also showed that day 3 was the day with the largest number of patients, and was also the day with the longest waiting time at 245.1 minutes. This difference can be understood because many patients were worried that the Monday of the week was crowded with patients. It could also be because on Monday patients only get the health insurance transfer certificate, and patients were pushed to Tuesday <sup>5</sup>. Friday had the shortest waiting time at 176.1 minutes. This may be because many patients were afraid that weekend medical examinations may be extended into next week.

**Waiting time for examination and number of paraclinical tests:** Waiting time for examination is proportional to the number of paraclinical tests, the more tests done, the longer it takes. The average waiting time for a medical examination was 50.7 minutes, if there was one test it was 209.0 minutes if there were two 2 tests it was 256.9 minutes, if there were 3 tests it was 277.7 minutes, if there were 4 tests it was 331.3 minutes. So this waiting time was still slower than the waiting time at Gia Lam General Hospital <sup>6</sup>, the waiting time for one test was 142 minutes, for two tests was 212.0 minutes, and for three tests was 225.0 minutes. Waiting time for this examination was also slower than Tien Giang Central General Hospital <sup>3</sup>, waiting for an examination without a test was 108.4 minutes, with one test being 161.8 minutes;

two tests were 193.0 minutes; There were three tests of 260.0 minutes. Waiting time for this examination was also slower. However, compared with Decision 1313 BYT/ 2013 <sup>1</sup>, our waiting time for examination still meets the requirements of the Ministry of Health with the average time examination target being two hours, one paraclinical technique being 3 hours, and two paraclinical technique being 3 hours,5 hours, and three paraclinical techniques were 4 hours.

Patients who registered for examination before 7:30 a.m. had the highest number of paraclinical tests because these were often people who were referred by health insurance, whose home was over 50km away, or who were coming for the first examination, whose illness was difficult, complicated, and psychologically worrying, therefore, the patient registered for examination earlier and required more tests. The patients with the smallest number of clinical trials were the patients who registered in the afternoon and ended in the afternoon. These were usually people with mild illnesses who had experienced examination and rarely needed to do tests or get regular medication for chronic diseases. So they proactively go to the doctor late.

## CONCLUSION

The average waiting time for medical examination at 108 Military Central Hospital is guaranteed to comply with the regulations of the Ministry of Health. Factors statistically significantly related to patient waiting time for examination include age, education level, occupation, mobility, number of medical examinations, hospital distance, and registration time, medical examination and treatment registration, and number of paraclinical tests.

## RECOMMENDATIONS

Propose to the Leaders of the Outpatient Department to arrange clinics to suit different target groups, which need to pay more attention and arrange for groups of patients under 18 years old, patients who are active soldiers, and those who are under 18 years old. Patients arriving before 7:30 a.m., carefully instruct patients who have many paraclinical tests, and every Tuesday it is necessary to increase human resources to support patients and shorten waiting time for examination.

## REFERENCES

1. Ministry of Health. Decision No. 1313/QĐ – BYT on Guidance on medical examination procedures at hospital medical examination departments. 2013.

2. Dang Duc Nhu, Nguyen Thi Thu Huong, Nguyen Thai Quynh Chi, Pham Duy Thanh, Ho Xuan Son. Time for outpatient medical examination at the medical examination department, Vinh Phuc Provincial General Hospital in 2022. *Journal of Preventive Medicine*.2023;33(2):137-147. <https://doi.org/10.51403/0868-2836/2023/1043>.

3. Tran Van Rin, Ta Van Tram. Current status of waiting time for medical examination and some influencing factors of patients coming for examination at the medical examination department, Tien Giang Central General Hospital in 2019. *Vietnam Medical Journal*. 2020;487:101-106.

4. Tran Thi Quynh Huong. Research on medical examination time and cost of health insurance patients at Thong Nhat Dong Nai hospital in 2013. *Scientific and technical proceedings of Thong Nhat General Hospital* 2014. 2014.

5. Ngo Thi Ngoan. Survey of patient satisfaction when treated at Military Hospital 7 from April 2017 to April 2018. *Journal of clinical medicine* 108. 2018;13:278-285.

6. Tran Thi Khue, Truong Quang Trung. Medical examination time according to the outpatient examination process at Gia Lam General Hospital in 2022. *Journal of Nursing Science*. 2023;6(06):93-101. DOI: 10.54436/jns.2023.06.748.