

**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
**SCHOOL OF PUBLIC HEALTH**

**REDUCING OUTPATIENT WAITING TIME FROM PATIENT  
ARRIVAL TO HOSPITAL UNTIL TO SEE PHYSICIANS**  
**YEKATIT 12 HOSPITAL MEDICAL COLLEGE**

**BY AYELE CHERENET (RN, BSC)**

**ADVISORS: 1. DR. MESFIN ADDISSE (MD; MPH)**  
**2. CHRISTINA YUAN (MPH)**

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THE DEGREE OF MASTERS OF HOSPITAL AND HEALTH CARE  
ADMINISTRATION**

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**ADDIS ABABA, ETHIOPIA**

## Declaration

1. This thesis is my original work, and all those sources of material all are used for the thesis has been duly acknowledged.

Student's Name **Ayele Cherenet**

Signature-----

Place **Addis Ababa University**

Date of submission **November 25/2013**

2. This thesis has been submitted for examination under my approval as a university Advisor

Advisor's Name **Dr. Mesfin Addisse (MD, MPH)**

Signature -----

Place **Addis Ababa University**

Date of submission **November 25/2013**

3. This thesis has been evaluated under my approval as a university examiner

Examiner's Name **Dr.demeke Assefa (MD, MA)**

Signature -----

Place **Addis Ababa University**

Date of submission **November 25/2013**

**Addis Ababa University,  
College of Health Science,  
School of Public Health**

**Master of Health Care and Hospital Administration  
Capstone project**

<b>Name of investigator</b>	<b>Ayele Cherenet</b>
Name of advisor(s)	Dr. Mesfin Addisse (MD,MPH) Christina Yuan
Full title of the capstone project	Reducing outpatient waiting time from patient arrival to hospital until to see physicians and increase customer satisfaction
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Address of investigator	Cell phone:- 0911570288 Email:- chaye7@yahoo.com

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## **Acronyms**

AAU – Addis Ababa University

ALOS – Average Length of Stay

ART – Anti Retroviral Treatment

BOR – Bed Occupancy Rate

BPR – Business Process Re-engineering

EHRIG – Ethiopian Hospital Reform Implementation Guideline

ENT – Ear Nose Throat

HIV – Human Immune Deficiency Virus

IVP – Intra Venous Procedure

KPI –Key Performance Indicator

NIME – New Innovative Medical College

NRC – Nutrition Rehabilitation Centre

OPD – Outpatient Department

PMTCT – Prevention Mother to Child Transmission of HIV

RCA – Root Cause Analysis

RHB – Regional Health Bureau

VCT – Voluntary Counseling and Testing

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## **Operational definition**

1. **Outpatient waiting time:** average time from arrival at the outpatient department to treatment consultation with clinical staff member
2. **Patient satisfaction:** the customer's response to the evaluation of discrepancy between prior expectation and the actual performance of the product is perceived after its consumption.
3. **Bed occupancy rate:** the average percentage of occupied beds during the reporting period.
4. **Average length of stay:** the average number of days from admission to discharge, death or transfer out.
5. **Referrals made:** the total number of patient attendances who were referred to another facility with a referral paper during the reporting period

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## Abstract

**Problem statement:** In Yekatit 12 hospital medical college long waiting time of registration to see a physician is one of the most problems.

**Objective:** The overall objective of the project is to reducing outpatient waiting time and increase customer satisfaction by the end of October 2013

**Method:** Pre post intervention was conducted in Yekatit 12 hospital medical college from January 2013 to September 2013

**Result:** Patient waiting time and customer satisfaction improved based on pre and post intervention comparisons the success rate of patient satisfaction from 6.2 to 7.0 and waiting time from 2.55 hours to 1.30 hours

**Conclusion:** Proper management of patient flows and satisfaction to participants is the process can be effective to improve unnecessary waiting time in the hospital and sustainable provision of follow up can result in significant improvement

**Recommendation:** Full implementation and proper management should be strengthened by regional health bureau for all hospitals

# **1. INTRODUCTION**

## **1.1.The health facility**

Yekatit 12 hospital was established in 1923G.C as one of modern medical service delivery centers in the country. After many decades of medical service delivery, in 2011G.C, it became a medical college by decision of the city government of Addis Ababa. The city government, recognizing the long aged service the hospital has been rendering to the residents of Addis Ababa and taking in to account its present statues, decided to reestablish it as center for training medical professional combining with medical service delivery. The establishment proclamation (proc.no.31/2011) issued by the council of the city government of Addis Ababa, renames the hospital as Yekatit 12 hospital medical college.

The college is devoted for training medium and higher level of health professionals in amalgamation with health service delivery through applying new method of training that combines theoretical training with practical application. The training method stipulated in the establishment proclamation and instituted in this legislation is newly introduced to the country under the auspices of applying practice oriented medical training in higher magnitude. The hospital was redesigned to be used as a research center for the college in addition to its medical service that it renders to the public being a college hospital.

Yekatit 12 hospital medical college is now a center for both high quality health service and academic excellence.

Total population served is about 1.5 million people coming from different catchment sub cities and around city rural areas

The hospital is staffed by 23 specialist 34 general practitioner 214 nurses 18 laboratory technicians and technologists 18 pharmacists 10 x-ray technicians 15 midwife and 205 Other none technical staff

Currently the hospital has 224 beds. The average length of stay in the hospital is 6 days

The number of outpatient visit in 2013 is 152,512 patients seen.

Key performance indicator service like bed occupancy rate is 81.5%

Ethiopian health reform implementation guide results is 78%

## **Types of services provided in the hospital**

### **Clinical services**

- Internal medicine
- Surgery
- Gynecology & Ob
- Pediatrics
- Dental
- ENT
- Private wing
- Burn and cleft lip
- Neonatology
- Child adolescent psychiatry
- Family planning
- Immunization
- Safe abortion and post abortion care
- ART
- TB/HIV

### **Laboratory service**

- Blood chemistry
- Hematology
- Serology
- Parasitological
- Urinalysis
- Culture and S.
- HIV screening

### **Diagnostic services**

- Barium meal
- Ultra sound
- X-ray
- Barium enema
- Endoscopy
- Cystourethrography
- Fistulography
- IVP

### **Other service** Speech therapy

- Physiotherapy
- IV fluid production
- NRC
- Environmental health
- VCT
- PMTCT
- Surveillance
- Teaching medical student

## **1.2. Statement of the Problem**

Patients are waiting longer time in surgical and medical regular outpatient from arrival until they see physicians except others like follow-up clinic patients index card collected and directly taken out with limited process only and they have their own assigned worker. Pediatric department have separate card room and others department the same as follow-up clinic.

Patients are waiting longer time in each process starting from arrival of patient, registration and starting time of physicians

Waiting time has an impact to prevent hospital acquired infection and bring quality health services and meet health service standard, vital for producing accurate and reliable for effective treatment.

The major complaint for the last two years was they do not get doctors on time and registration time taken longer and inappropriate. However there are problems that still need special attention, but the existence of long waiting time is the one of the biggest problem of the hospital.

As a result it brings the low quality health care services and customer dissatisfaction.

This project will have its own contribution to improving waiting time in the hospital which brings about a significant improvement in the health care service.

By using problem ranking matrix different problems have seen their impact is mild, moderate or severity and also they are rare, common or always seen. Accordingly long waiting time is selected due to its severity and always the problem was happened.

# **Objective**

## **General objective**

Reducing outpatient waiting time from patient arrival to hospital until to see physicians and increase customer satisfaction in Yekatit 12 hospital medical college

## **Specific objectives**

To reduce outpatient waiting time motion from 175.89 minutes to 115minutes by the end of September 2013 G.C

To increase customer satisfaction from 6.2 scale to 7.3 by the end of September 2013 G.C

### **1.3. Root cause analysis**

Using the fishbone tool, many causes were identified as contributors to the existence of long waiting time and ineffective process and flow chart tool was carried out to see the process of patient flows.

#### **Methods used to identify the root cause include**

- Assessments of business process re-engineering operational standards were used.
- Discussion with senior management team, triage workers and card room workers.
- Observation all the process starting from triage until to see the doctors.
- Collect information from customers and facility staffs.

#### **Problems identified as evidences**

There is no responsible assigned person to coordinate the process.

Long process for registration starting from distribution of order numbers, triage, payment and distribution of cards.

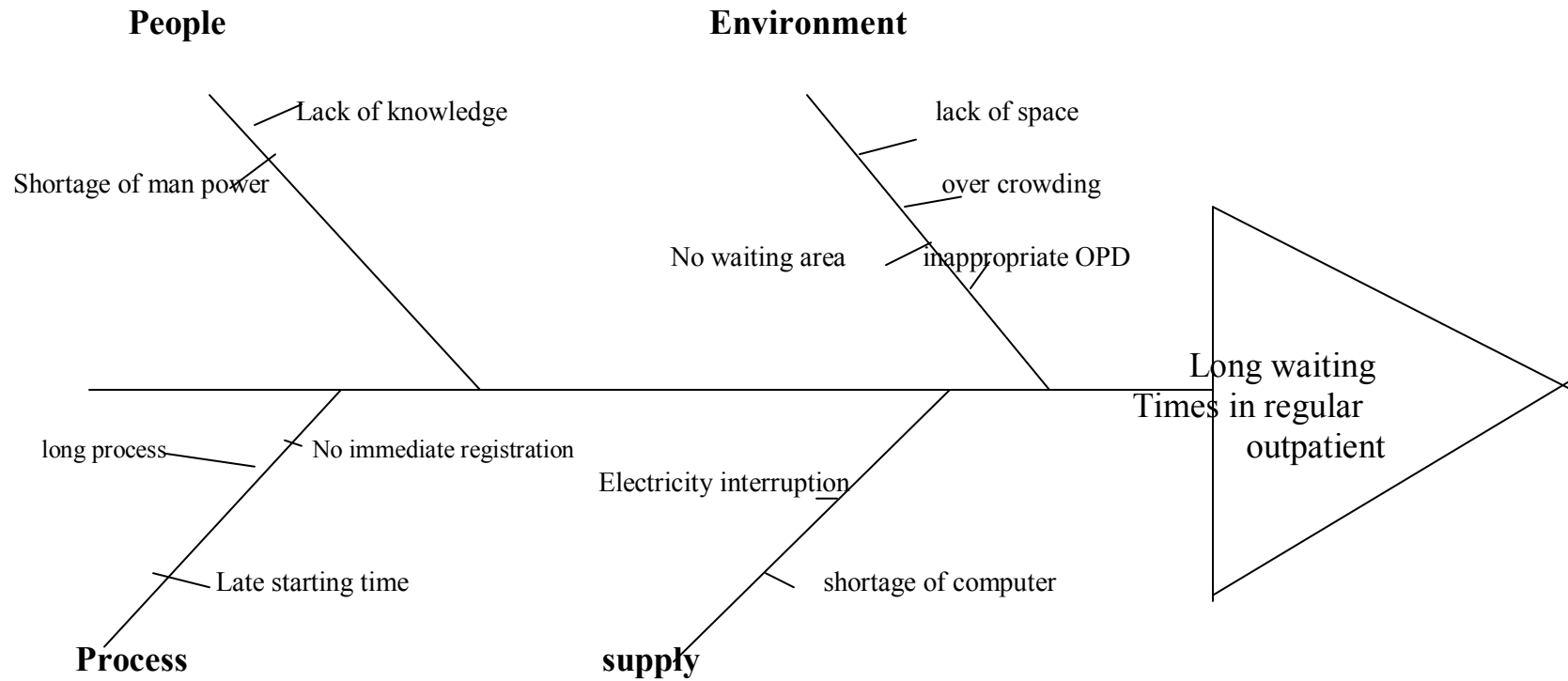
No immediate starting and registration time.

Shortage of manpower like cashier, runner and registrar,

Almost all patients come at one time.

There is no computerized system due to electricity interruption.

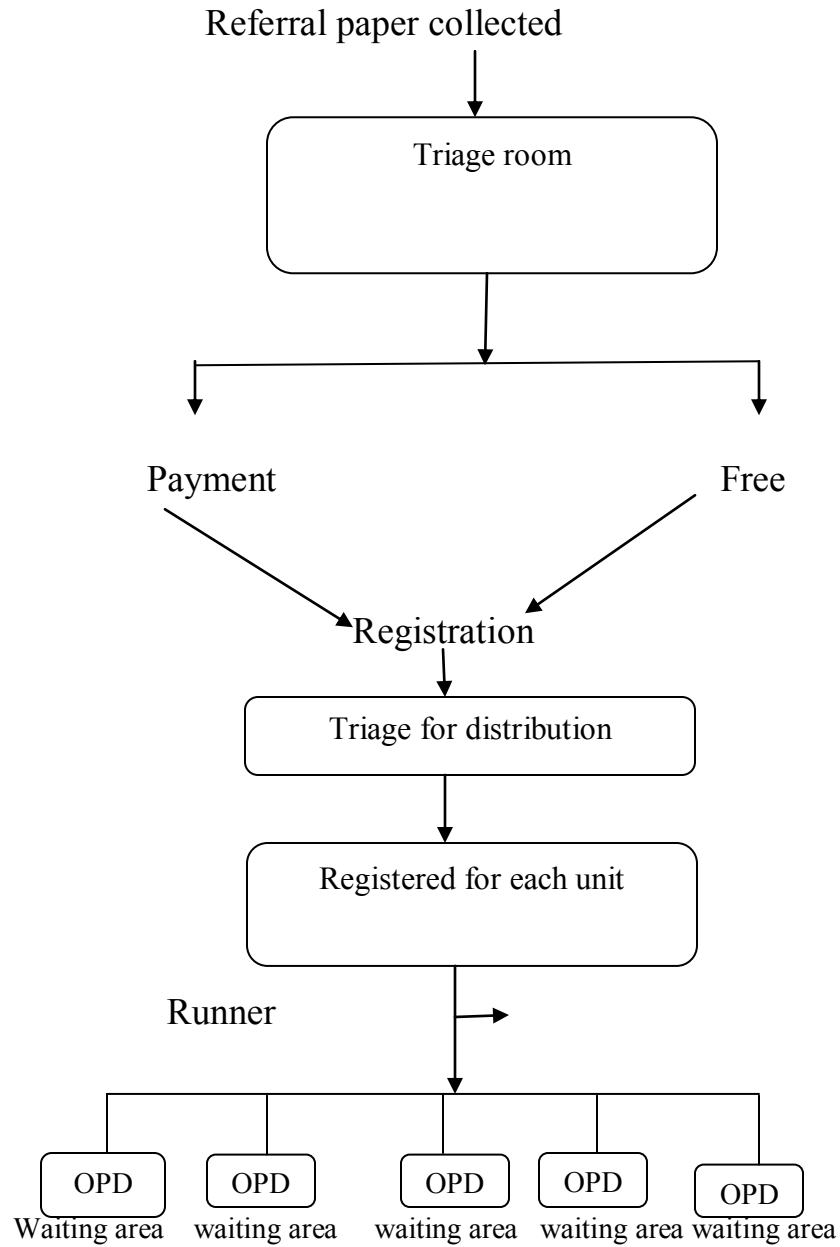
**Figure 1: Fish Bone Diagram (problem: Long waiting time to see physicians in Yekatit 12 hospital medical college)**



## Figure 2: Patient Flow

### Pre intervention

(Patient flow from arrival time to see physicians  
studied structure in business process re-engineering  
in Yekatit 12 hospital)





## 1.4. Literature review

Outpatient waiting time that a patient waits from arrival to treatment is a measure of access to health care services. Long waiting times indicate that there are insufficient staffs and/or resources to handle the patient load or that those available resources are being used inefficiently.

By measuring waiting times a hospital can assess if there is a need for extra personnel and/or other resources in the outpatient department and/or to review patient flow to increase the

Outpatient waiting time is an essential and first line of health facilities and is an important part of modern health services and considered to be crucial for the services offered in health education and transformation of health information.

Satisfaction is related to more partnership building, more social conversation, courtesy, clear communication and information, respectful treatment, length of consultation, cleanliness of facility and waiting time(1).

WHO reports state that in most African countries there is lack of skilled human resources logistic support, infrastructure, professionally trained non technical staffs which has a great factor for longer waiting time (2).

Patient waiting time at an outpatient clinic in the study examined the usual activities or patients would favor during waiting time at the general outpatient clinic. The most desired activity during waiting period was health education on specific disease (3)

Reducing waiting time in emergency department triage one successful system decrease waiting time for clients by instituting protocols. Another successful method for decreasing turnaround time includes an on-site stat lab that decreased laboratory turnaround time.

Physical re-modeling was done to create an expanded triage area where clients could be examined (4)

Modeling the impact of integration health services has the potential of reducing waiting time due to more efficient use of resources (5)

Waiting time studies to improve service efficiency to avoid unnecessary visits to outpatient department referral system should be enforced. unnecessary arrivals, lack of resources and Ignorance of patients an outpatient department, procedures and shortage of staffs must be Corrected (6).

Developing patient registration and medical records management system has a single point of entry for patient registration a customer made Ms-Access based computerized system for

Master point index and registration process. Standardization of medical records forms. Implementation of standardized procedures for medical record handling and filing and enhanced human resource training and supervision (7)

Patients' waiting time and doctors' idle time in the outpatient setting to examine the effect of patient loads on patient waiting times, conducted to examine the hypothesis that patients' early or late arrival for appointments had an adverse effect on their waiting time (8)

Outpatient appointment scheduling service times distribution describes the behavior of the consultation we assume a doctor always uses as much time for patient as medically required regardless of work pressure patients' arrival process their punctuality with regard to the scheduled appointment time.

Punctuality of doctors when the doctor arrives late for the first appointment the internal waiting times of all patients in the clinic session are affected by this delay

Doctors' interruption levels indicate the percentage of time during a clinic session in which a doctor has to perform other tasks and therefore cannot see patients. Appointment rule subsection use notation of the general formula problem description.

Sequencing rule determines the order of scheduling patients for a clinic session.

Patient classifications differ in terms of service time characteristics, diagnosis and urgency.

Queue discipline determines the order of calling patients from the waiting room by the doctor (9).

A web based appointment system to reduce waiting for outpatients has been the focus of a large number of studies because waiting and treatment times are usually regarded as indicator of service quality.

Outpatient waiting time any waiting list is simply the difference between demand and supply, if demand and supply follow different monthly pattern then the number waiting will fluctuate accordingly (10).

Many studies have shown that longer waiting time in health care causes patient dissatisfaction and get more attention to make different research based on their causes the most common factors contributing to the long waiting time is inappropriate registration process and shortage of manpower (11) which is the same to Yekatit 12 hospital.

The studies done in India and Malaysia on patient satisfaction showed that waiting time had a significant association with patient satisfaction. The main factors leading to long waiting time are identified at registration time and the number of staff at the country. However the waiting time for physician consultation demonstrates long delays of more than three hours in some cases. The main reason for dissatisfaction was long waiting time to get or complete the services (12)

A survey conducted to assess patients' satisfaction on outpatient services in the hospitals of the Amhara Regional state, Ethiopia. Long waiting hours during registration. Visiting of doctors after registration. Laboratory procedures, and revisiting of the doctors for evaluation with laboratory results and obtaining drugs from pharmacies were associated with dissatisfaction (13)

A study done on outpatient satisfaction at selected government health facilities conducted between June and September 2004 in major cities of Ethiopia indicated that, study participants who belonged to the age group 20-24 and 35-49 were 52% and 46% satisfied on health care providers' characteristics(1,13,15)

Providers, who appear fully attentive, avoid distractions, smile and sit on the same level as the patient all convey an important message of caring, listening, empathy and patient enablement also plays a significant role in patients' overall satisfaction (14).

A study conducted by Lemessa Ol-jira and Solomon Gebre-Selassie in Jimma university specialized hospital showed that the percentage of users satisfied with health care services increased progressively with increase in age patients were more likely to be satisfied with the medical staff if they had the following attributes i.e. Medical staff were competent, polite and used a simple language that patients could easily understand (15)

A study conducted in Jimma university specializes hospital concerning waiting times 20%,100% and more than half reported that they served with in 15 minutes at the card room, the pharmacy and at ART, respectively. This is consistent with a report from London where 47% of the respondents states that their doctor saw them within 15 minutes.

The above positive responses by clients in getting appropriate information about their disease, treatment and waiting time are encouraged for the clinic staff for further improvement of the services (16)

Assessment of clients 'satisfaction with health service deliveries at Jimma university specialized hospital. This study 37.2%of the clients was dissatisfaction by the overall waiting time to get the service. This is higher than the finding reported earlier in Jimma hospital which showed 20.4% of the clients have reported long waiting time. (17)

Long waiting time at outpatient clinics is the one if common cause of patients' dissatisfaction all the above studies and strategies focused to reduce long waiting times and resulting increase patient satisfaction. This capstone project well utilizes the above schemes to improve the waiting time.

## **2. Methodology**

### **2.1. Setting**

The capstone project was conducted at 90 years old urban referral hospital in Addis Ababa. 224 beds serve a catchment area of approximately 1.5 million people administered by Addis Ababa Health Bureau. Triage case team, card room, outpatient clinic were the major area of study.

### **2.2. Study design**

Pre and post intervention study was conducted to assess the status of time motion studies and survey of waiting time patients' satisfaction during January 2013 to September 2013.

### **2.3. Study population**

The hospital provides services for about 200 medical and surgical referral patients per day.

### **2.4. Study sample**

Sampling from three days for the assessment of both medical and surgical regular patients'

Time motion study: time was taken from arrival of patient to reach physicians systematic random sampling every 4<sup>th</sup> patient selected 50 out of 200 patients

Patient waiting time satisfaction: randomly selected 50 patients out of 200 total patients

### **2.5. Data collection procedure**

Base line data were collected in January 2013 follows up data in July 2013, after 2 months of implementation of both time motion study and client waiting time satisfaction. Client's satisfaction was measured with interview survey completed by 50 clients who was present at the hospital in January 2013 2<sup>nd</sup> week before intervention and July 2013 2<sup>nd</sup> week after intervention.

We developed the survey which was translated in to Amharic

The clients satisfaction rate included 20 items, each rated on a four point scale of strong agree, agree, disagree and strongly disagree. One item focusing on clients all over satisfaction rate (0-10).

## 2.6. Data analysis procedure

Data was analyzed using excel sheet and t-test used to determine whether statistical difference exist between pre and post intervention results.

$$t = \frac{(x_1 - x_2)}{\sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

## 2.7. Ethical consideration

This study was approved by Yekatit 12 hospital management committee and the program known by regional health bureau and customer consent

## 2.8. Inclusion and exclusion criteria

- Inclusion criteria: regular referral patients
- Exclusion criteria: follow up patients, admitted patient, specialty clinics

## 2.9 Sample size determination

$$N = \frac{(z_{1-\alpha/2})^2 \cdot x s^2}{D^2} = 100$$

## 2.10 Result dissemination

The results of the project were disseminated to Addis Ababa health bureau and Yekatit 12 hospital medical college.

## 2.11 Data quality management

Designed questionnaire was selected from the business process reengineering operational standard and training on objectives and process of the data collection was given to the data collectors and close supervision was made during the data collection process

### **3 INTERVENTION**

#### **Selected strategy**

##### **Sensitization and discussion with physicians**

Doctors are the main participatory for any problem occur in the outpatient case team and assigned as a team leader. Medical director conducted the sensitization program on the topic of reducing long waiting time for two days morning meeting program for outpatient department doctors

##### **Rearrange the registration process**

Insufficient process must be corrected to reduced long waiting time and rearranged by new formed committee members, sensitization and discussion for a total of 45 workers in outpatient department

##### **Avail waiting area**

Health care facilities must have an area for patient waiting in proper condition for protection from rain and sun and as well for easily to communication the customers for health education and information. Therefore Yekatit 12 hospital medical college has planned to establish a new waiting room. By making an agreement with nongovernmental organization like John Hopes king university.

##### **Increase the number of staffs**

Specially those having higher qualification like medical doctors and increasing the number of non technical person like card room workers, registrars and cashiers

### Establishing supervision for clear notification and work process system

Establishing effective and sustainable monitoring and supervision can play significant role to reduce unnecessary waiting time. The medical director and outpatient case team coordinator will facilitate this activity.

### Perform comparative analysis of strategic alternatives

**Table 1:- Create decision matrix qualitative**

Strategic alternatives		Evaluation criteria		Time	Total
	Impact on problem	Expense	Political feasibility		
1. Sensitization and discussion with physician.	Good	Low	high	Days	
2. Avail waiting area	Good	High	low	3month	
3.Increased number of staffs(runner)	Good	High	low	month	
Re-arrange the registration flows process	V.good	Low	high	Days	

**Table 2: Decision matrix quantitative Evaluation criteria (5=good 1=bad)**

	Impact on problem	Expense	Political feasibility	Time	Total
1. Sensitization and discussion with physician.	3	5	4	4	16
2.Avail waiting area	3	1	1	1	6
3.Increased number of staffs(runner)	3	1	2	3	9
Re-arrange the registration flows process	4	5	5	5	19



## **Select the best strategy**

- Re-arrange the registration process
- Sensitization and discussion with physician

## **Implementation accomplishments**

- What activities or tasks?
- When does each activity need to start and end?
- Who is involved with implementing the plan?
- What is each person's role?
- The list of activities and time line (GANTT chart )
- Creation of a budget

As part of this project, the following are accomplished

Sensitization and discussion with doctors how to reduce patient waiting time and the participation of doctors in this process for two days by medical director done

Sensitization and discussion with triage health professionals how to shorter the work flows process and rearrangement of the process

A new building constructed for patient waiting area



N°	Plan	Person responsible	December				January				February				March				April				May				June				July				August				September				October			
			1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k	1 w k	2 w k	3 w k	4 w k								
10	Capstone 1 <sup>st</sup> draft proposal	MHA student																																												
11	Capstone 2 <sup>nd</sup> draft proposal	MHA student																																												
12	Writing capstone report	MHA student																																												
13	Implementation	MHA student																																												
14	Post measurement and write final report	MHA student																																												
15	Final report oral defence	MHA student																																												

## Evaluation plan for manager

Plan-do-study-act (PDSA) cycle Ethiopian Health Reform Implementation Guide suggest

How to review and evaluate organizational performance (usually pre-post studies)

Baseline---intervention---follows-up

### - **Process indicators**

- N° of physicians in OPD sensitized---4/5-----80%
- N° of staffs sensitized
  - ❖ Card room workers ---10/15-----66%
  - ❖ Triage workers-----3/4-----75%
  - ❖ Runner----- 1-----100%
  - ❖ Cash registrar -----2/3-----66%

### - **Outcome indicators**

- Decreased long waiting time 175 minutes to 90 minutes
- Increased patient satisfaction 6.2 to 7.0 by scaling 0-10 score
- Availability of waiting area room 1---1---100%

## 4 Results

### Socio-demographic characteristics of study samples

Hundred patients were interviewed yielding a response rate of 100% among them 54 (54%) were females. 56 of them were found within age categories of 18 to 45 at pre-intervention and 60 of them at post intervention the mean age is 43.3 and standard deviation is 10.7 at pre intervention but 43 and 10.7 at post intervention. Socio demographic characteristics of the respondent showed in table 1 below.

The likelihood of decreasing waiting time and increasing client satisfaction significantly from before the intervention to after intervention (61.3% pre intervention and 80.4% post intervention) (table 3) the time required to retrieve waiting time improve significantly from before to after the intervention (175.22 minutes to 93 minutes), in addition from nothing waiting area, after the intervention one 5x10 Esq. room constructed.

**Table 1: Socio-demographic characteristics of study participants in Yekatit 12 hospital January 2013**

Socio-demographic variables	Pre assessment		Post intervention		P value
	N	%	N	%	
<b>N=100</b>					
<b>Sex</b>					
<b>Male</b>	46	46%	44	44%	
<b>Female</b>	54	54%	56	56%	
<b>Age</b>					<b>t=0.56</b> <b>Df=98</b> <b>critical value =1.984</b> <b>thus not significant</b>
<b>18-30</b>	22	22%	16	16%	
<b>31-45</b>	34	34%	44	44%	
<b>46-55</b>	16	16%	20	20%	
<b>56-65</b>	14	14%	12	12%	
<b>&gt;65</b>	14	14%	8	8%	
<b>Mean(S.D)</b>	<b>47.6(11)</b>		<b>45(13.6)</b>		

### Pre and post intervention changes in outpatient waiting and clients' satisfaction

Table 2: Reducing outpatient waiting time at Addis Ababa city Yekatit hospital September 2013

Time motion	Pre intervention	Post intervention	P value
Patient arrival time to the hospital	37.5 minutes	30 minutes	<b>t=10.7 DF=98 critical value 1.984 thus significant</b>
Time of referral paper collected	10 minutes	5 minutes	
Time of screen by triage worker	35.6 minutes	5 minutes	
Payment and free registration time	35.32 minutes	10 minutes	
Card registration completed time	10 minutes	3 minutes	
Cards taken to doctors office	11.58 minutes	10 minutes	
Entry time to physician	38.22 minutes	15 minutes	
Total time	175.22 minutes	93 minutes	

### Client satisfaction

Table 3: Status of patient satisfaction at Addis Ababa city Yekatit 12 hospital September 2013

Client satisfaction	Pre intervention	Post intervention	P value
Over all mean score	6.2	7.0	<b>t=6.7 DF=98 critical value 1.984 thus significant</b>
Percentage of agree and strongly agree for the following item			
Record office workers and triage professional listen me attentively	35/50-----70%	47/50-----94%	
It was clear the way of reception	24/50-----48%	47/50-----94%	
There is no waiting area problem	23/50-----46%	25/50-----50%	
The system of registration has no problem	30/50-----60%	47/50-----94%	
Easy to move from place to place for registration	40/50-----80%	47/50-----94%	
The registration has no impartiality	43/50-----86%	48/50-----96%	
It is cleared how to registered	40/50-----80%	42/50-----84%	
The time of arrival to hospital is appropriate	33/50-----66%	36/50-----72%	
Registration numbering time is good and appropriate	30/50-----60%	43/50-----86%	
The triage time is enough	28/50-----56%	43/50-----86%	
The time of paying is good	25/50-----50%	45/50-----89%	
The free registration time is good	23/50-----46%	44/50-----88%	
The registration is relevant	30/50-----60%	44/50-----88%	
The time of taking to OPD is relevant	33/50-----66%	36/50-----72%	
The waiting time to get doctors is appropriate	17/50-----34%	18/50-----36%	
The distance between card room and outpatient clinic is near and easy	42/50-----84%	43/50-----86%	
I recommended to others to use this facility	30/50-----60%	37/50-----74%	
The record room space is enough	28/50-----56%	40/50-----80%	
The n° of staff in record room are enough	29/50-----58%	32/50-----64%	
Total average	61.3%	80.4%	

There is an assessment and observation done for 1 week duration doctors starting time at OPD

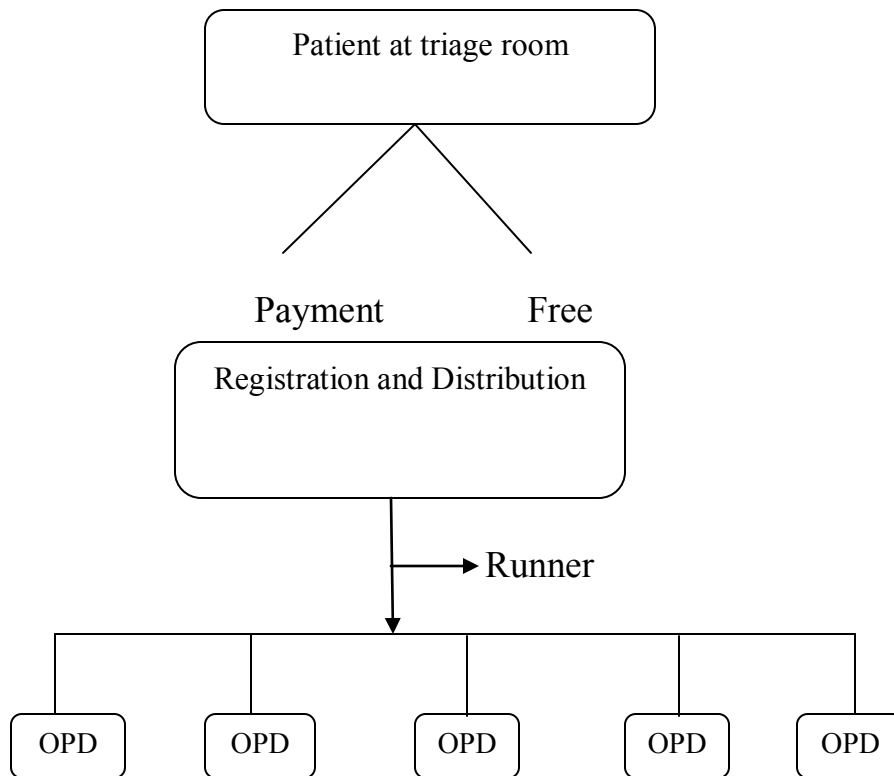
Table 4: Physician starting time before and after intervention in Yekatit 12 hospital 2013

Observation	Monday		Tuesday		Wednesday		Thursday		Friday		Average	
	Pre assessment	Post intervention	Pre assessment	Post intervention	Pre assessment	Post intervention	Pre assessment	Post intervention	Pre assessment	Post intervention	Pre assessment	Post intervention
Physician A	3.45	3.15	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.45	3.27
Physician B	3.30	3.30	3.30	3.15	3.30	3.15	3.30	3.15	3.30	3.15	3.30	3.18
Physician C	4.00	3.15	3.45	3.20	3.45	3.15	3.30	3.15	4.00	3.30	3.48	3.19
Physician D	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
Physician E	3.45	3.30	3.45	3.30	3.45	3.30	3.45	3.30	3.45	3.30	3.45	3.30
Average	3.42	3.24	3.49	3.28	3.39	3.35	3.35	3.27	3.30	3.30	3.39	3.24

## Figure 2: Patient Flow

### Post intervention

(Longer patient flow re-structured by reducing a repeated flow chain in Yekatit 12 hospital)





## 5 DISCUSSION

In this capstone project, we found that a survey of the time motion of patient arrival until to see physicians is longer comparing to business process re-engineering processing time schedule. Business process re-engineering assuming waiting time two hours stay in the hospital, each doctor has to see a total of 32 patients in working hours but the number of patients flows do not recognized

Establishing new structure and patient flow time and limitation in each process in outpatient department by document of business process re-engineering resulted in some change by increasing patient flows percentage from pre intervention score of 25%(10 patients per doctor) to post intervention score of 100%(40 patients per doctor). This finding suggests that number of patient seen increased, the patient can attend with the same day of referral

The finding the changes in the referral patients may not appointed for the next or third day but not have improvement in waiting time prolonged until to see a physician, the structure and process time made by business process re-engineering document was very important. However due to limit human resource and workers attitude change the desired outcome was not achieved.

Waiting time studies to improve service efficiency national Hospital of Srilanka

- To avoid unnecessary visits to OPD referral system should be enforced
- Unnecessary arrivals lack of resources and ignorance of patients on OPD procedures and shortage of staffs must be corrected
- Similarly, a study showed the same to Yekatit 12 hospital medical college

Long waiting hours during registration were associated with dissatisfaction on outpatient services in hospitals of the Amhara Region (47.5%) different from Yekatit 12 hospital (80%)

Determinant of patient satisfaction with outpatient health services at public and private hospitals in Addis Ababa; Ethiopia have reported overall satisfaction levels ranging from 52%-57% which is 23% difference from Yekatit 12 hospital

Assessment of clients' satisfaction with health service deliveries at Jimma University Specialized Hospital several studies conducted in outpatient departments of different hospitals in Ethiopia revealed client satisfaction level ranging from 22% in Gondar to 57% in Jimma long waiting hours during registration. comparatively Yekatit (80%) is better than Gondar and Jimma

Clients' satisfaction with Anti Retroviral therapy services at Jimma University specialized hospital

Concerning waiting time 80%, 100% and more than half reported that they were served within 15 minutes at the card room. Much better than Yekatit 12 hospital this is 53 minutes.

Reducing of waiting time and efficiency enhancement in an ENT-University outpatient department

Waiting time at reception 14 minutes and between registration and treatment start 57 minutes which is shorter than Yekatit 12 hospital (90minutes)

## 6 CONCLUSION AND RECOMMENDATION

**Conclusion:** the findings of this capstone project suggest a number of implication that a simple set of intervention could be accomplished to significantly improve the accessibility and decreasing long waiting time and bring client satisfaction, simplicity and inexpensiveness of this project results that shows a well planned system intervention can improve any operation in health care system and can facilitate better patient need.

The likelihood of decreasing waiting time and increasing client satisfaction significantly from before the intervention to after intervention (61.3% pre intervention and 80.4% post intervention) the time required to retrieve waiting time improve significantly from before to after the intervention (175.22 minutes to 93 minutes), in addition from nothing waiting area, after the intervention one 5x10 Esq. room constructed.

This project finding indicate that applying problem solving to outpatient waiting time can be effective in improving patient satisfaction and quality care.

**Recommendation:** Full implementation and proper management should be strengthened and the full support from hospital leadership is the key to success. Longer follow-up would be required to assess the sustainability of the registration process

- Other components of factors to cause for long waiting time must be studied.
- Allocation of non technical person by business process reengineering has to be revised.
- Intensive and continuous training for the workers should be given.
- Implementation of the Ethiopian hospitals reform guideline strategies must be practical all over the country.

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## 8 APPENDICES

### Annex- A: total number of employees in Yekatit 12 hospital

No	Position	Male	Female	Total
1	Doctors (MD+ specialty )	20	3	23
2	Doctors (MD)	24	10	34
3	BSC/Nurses	21	68	89
4	Diploma Nurses	32	108	140
5	Administration	35	170	205
6	Academicsians	12	4	16
7	Lab. Technician	11	7	18
8	Pharmacy	9	9	18
9	Psychiatry Nurse	0	6	6
10	x-ray Technician	8	2	10
11	Physiotherapy	2	2	4
Total		172	389	563

**Annex –B: Medical and surgical new and follow-up outpatient waiting time assessment**

Research n <sup>o</sup>		Name of institution
M <input type="checkbox"/> <sub>1</sub> F <input type="checkbox"/> <sub>2</sub>	Age	Date/Month/Year
Moring/Afternoon		

	Very disagree	disagree	Agree	Very agree
1. Record office workers and triage professionals listened me attentively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. It was clear the way of reception	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. There is no waiting area problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The system of registration has no problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Easy to move from place to place for registration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The registration has no impartiality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. It is cleared how to registered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The time of arrival to hospital is appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Registration numbering time is good and appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. The triage time is enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The time of paying is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The free registration time is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. The registration is relevant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. The time of taking to OPD is relevant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The waiting time to get doctors is appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The distance between card room and outpatient clinic is near and easy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I recommended to others to use this facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. The record room space is enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The n <sup>o</sup> of staff in record room are enough	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. The value which I can give for this hospital from 0-10 is as follows (0 low -10 represent the better institution)	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10			

**Annex –C: New regular outpatient waiting time check list**

N<sup>o</sup>                      M       F                       Age \_\_\_\_\_

1. Patient arrival time in the facility \_\_\_\_\_
2. Registration number taken time \_\_\_\_\_
3. The time of referral paper taken \_\_\_\_\_
4. Seen by triage nurse \_\_\_\_\_
5. Payment or free service taken time \_\_\_\_\_
6. Registration completed time \_\_\_\_\_
7. Card is taken by runner to OPD clinic \_\_\_\_\_
8. Entering time to physician \_\_\_\_\_
9. Time of accomplished \_\_\_\_\_



### Annex –D Medical and surgical new and follow-up outpatient waiting time assessment

የውስጥ ደዌ እና የቀዶ ህክምና ተመላላሽ ህመምተኞች የቆይታ ጊዜ ዳሰሳ ጥናት

የጥናት ቁ	እድሜ	የጤና ተቋም ስም
ወንድ <input type="checkbox"/> <sub>1</sub> ሴት <input type="checkbox"/> <sub>2</sub>		ቀን (ቀ/ወ/ዓ)
ጠዋት/ከቀትር በኋላ		መምሪያ

	በጣም አልስማማም	አልስማማም	እስማማለሁ	በጣም እስማማለሁ
1. በዛሬው ከትትሌ የካርድ ክፍል ሰራተኞች እና ባለሙያዎች በጥሞና አዳምጠውኛል	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. በተቋሙ የተስተናገድኩበት አቅጣጫ ገልፅ ነበር	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. በጤና ተቋሙ የመቆያ ቦታው ምንም ችግር የለውም	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. የካርድ አወጣጡ ስርዓት ምንም ችግር የለበትም	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. የካርድ አወጣጡ ስርዓት ከአንዱ ቦታ ወደ ሌላ ቦታ ለመሄድ ቀላል ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. በካርድ አወጣጥ ስርዓት ምንም አይነት አድልዎ የለም	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. የካርድ አወጣጥ ስርዓቱ ገለጻ ተደርጎልኛል	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. ህክምና አገልግሎት መስጫ መድረሻው ጊዜ ተገቢ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. የተራ ቁጥር መስጫ ጊዜው ተገቢና አስፈላጊ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. በመለያ ባለሙያዎች ክፍል የመለያ ጊዜው በቂ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. ለክፍያ የሚወስደው ጊዜ በቂ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. የዱቤ ህክም ምዝገባ የሚወስደው ጊዜ ጥሩ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. ለካርድ ምዝገባ የሚወስደው ጊዜ አግባብነት ያለው ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. ወደ ህክምና ክፍል የሚወስድበት ጊዜ አግባብነት ያው ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. ህኪሙን ለማግኘት የሚወስደው ጊዜ ተገቢ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. ከካርድ ክፍል ወደ ህክምና መስጫው ለመሄድ ቀላል ቅርብ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. ሌሎች ተጠቃሚዎች እንዲጠቀሙበት እመክራለሁ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. የካርድ ክፍል አገልግሎት መስጫ ስራ በቂ ነው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. የካርድ ክፍል አገልግሎት መስጫ ሰራተኞች በቂ ናቸው	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. ከ0-10 ባሉት ደረጃዎች ለዚህ የጤና ተቋም የምሰጠው ውጤት እንደሚከተሉት ነው (0 አነስተኛ ደረጃ ሲሆን 10 ደግሞ ከሁሉ የተሻለውን ተቋም የሚወክል ነው)	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10			

**Annex –E አዲስ ተመላላሽ ህመምተኛ እና ክትትል ያላቸው/ የሰዓት መከታተያ ቅጽ**

1. ህክምና አገልግሎት መስጫ የደረሱበት ሰዓት \_\_\_\_\_ አስተባባሪ  
 ቁጥር የተቀበሉበት ሰዓት \_\_\_\_\_
2. የተላኩበትን ደብዳቤ/ የቀጠሮ ደብዳቤ የሰጡበት ሰዓት \_\_\_\_\_ አስተባባሪ
3. በመለያ ባለሙያዎች የታዩበት ሰዓት \_\_\_\_\_ መለያ ክፍል
4. የክፍያ/ነጻ አገልግሎት የፈጸሙበት ጊዜ \_\_\_\_\_ ክፍያ/ነጻ ሠራተኞች
5. የምዝገባ ስርዓት ያጠናቀቁበት ጊዜ \_\_\_\_\_ የምዝገባ ስርዓት
6. ስምዎት ተጠርቶ በሠራተኛ ወደ ሀኪም የሄዱበት ጊዜ \_\_\_\_\_
7. ወደ ሀኪሙ ተጠርተው ለህክምና የገቡበት ሰዓት \_\_\_\_\_ የክፍሉ ነርስ
8. በሀኪም ታይተው የጨረሱበት ሰዓት \_\_\_\_\_ የክፍሉ ነርስ