INTERNSHIP TRAINING

AT GULF MEDICAL COLLEGE HOSPITAL

AJMAN UAE

By

Dr GazalPreetSahota

Roll No. 30

PGDHM E (2012-2014)

INSTITUTE OF HEALTH MANAGEMENT RESEARCH, DELHI

INTERNSHIP TRAINING

AT GULF MEDICAL COLLEGE HOSPITAL

AJMAN UAE

"TO CALCULATE TURN AROUND TIME IN OBSTERTICS AND GYNECOLOGY DEPARTMENT USING SIX SIGMA LEAN ,GMC HOSPITAL, AJMAN"

BY

Dr.GazalPreetSahota

UNDER THE GUIDANCE OF

Dr. A. K. Aggarwal

POST GRADUATE DIPLOMA IN HOSPITAL AND HEALTH MANAGEMENT

2012-2014

INSTITUTE OF HEALTH MANAGEMENT RESEARCH UNIVERSITY DELHI

List of figures

Abbreviations

OBS	Obstetrics and Gynaecology
OPD	Outpatient Department
PAD	Patient Affair Department
NS	Nursing Supervisor
MD	Medical Director
DMAIC	Define , Measure, Analyse , Improve , Control
SOP	Standard Operating Measures
KIV	Key Input Variables
KOV	Key Output Variables

Acknowledgements

This report is a part of dissertation completed at Gulf Medical College Hospital and Research Centre (GMCHRC), Ajman, UAE. This report is based on the study that I have conducted on patient waiting time in outpatient department of Obstetrics and Gynaecologydepartment at GMCHRC.

First of all, we wish to thank Dr Prashanth Hedge MedicalDirector, Administrative head Obstetrics and Gynecology Department GMC Hospital Ajman UAE, for his unlimited support, guidance, giving a through insight of the hospital and his constant virtual presence despite of his busy schedule. During my term in the hospital he provided me with ample opportunities to explore my areas of interest and acquire knowledge about functioning of all the departments. He has provided me with opportunities and explained the importance of data driven decision making His trust and faith in my abilities motivated me and helped me to come up with innovative ideas.

We also express our sincere gratitude towards Dr Manvir Singh, Medical Director for his support and guidance during my visit to GMCHRC, which was my first insight to the functioning of a international hospital and Dr Manvir explained and gave me and insight into the qualities and responsibilities of a hospital administrator and introduced me to the world of international healthcare.

I would like to thank Mr. Akbar Director Healthcare Thumbay Group, for giving me the opportunity to work in the area where I had a tremendous opportunity to enhance my knowledge and skills and learn to deal with the difficult situations of the hospital.

. We are glad to acknowledge Dr. L.P Singh Director, Dr. A.K Aggarwal, Academic and Student Affair IIHMR who is my mentor for incorporating right attitude into us toward learning and helping and supporting whenever required. We are grateful to them for helping us to learn administrative tricks and styles, so that we can come to know that how does an hospital craters its patients successfully and how does a hospital give quality treatment to their patients.

I would also like to thank my parents and family for believing in me and discussing what I have learnt during my days in the hospital, which helped me to refresh my observations and identify areas where improvements can be made.

GazalSahota

TO WHOMSOEVER IT MAY CONCERN FOR WHATEVER THE REASON

This is to certify that **Dr.Gazal Preet Sahota student** of Post Graduate Diploma in Hospital and Health Management (PGDHM) from International Institute of Health Management Research, New Delhi has undergone internship training at **Gulf Medical College Hospital** from 1/3/2014 to 21/5/2014.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Dissertation is in fulfilment of the course requirements.

I wish him all success in all his future endeavours.

Dean, Academics and Student Affairs
IIHMR, New Delhi

Professor
IIHMR, New Delhi.

Certificate from Dissertation Advisory Committee

This is to certify that **Dr. Gazal Sahota,** a graduate student of the **Post- Graduate Diploma in Health and Hospital Management** has worked under our guidance and supervision. He/ She is submitting this dissertation titled **"To calculate turnaround time in Obstetrics and Gynecology Department using six-sigma Lean"** at **"GMC Hospital, Ajman"** in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management.**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Institute Mentor Name, Dr. A.K. Aggarwal.

Designation, DEAN, ACADEMIC AND STUDENT AFFAIRS

Organization INTERNATIONAL INSTITUTE OF HEALTH AND MANAGMENT RESEARCH NEW DELHI

Organization Mentor Name Dr. PRASHANTH HEDGE

Designation, MEDICAL DIRECTOR.

Organization GMC HOSPITAL, AJMAN.

Certificate Of Approval

The following dissertation titled **"To calculate turnaround time in Obstetrics and Gynecology Department using six-sigma Lean"** at **"GMC Hospital, Ajman"** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name

Dr.A.k Agarwal

Dr.Preetha G.S

Signature

INSTITUTE OF HEALTH MANAGEMENT RESEARCH DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the Dissertation titled " To calculate turnaround time in Obstetrics AND Gynaecology department using Six Sigma Lean GMC Hospital, Ajman" and submitted by Dr. Gazal Preet Sahota (Enrolment Number 30), under the supervision of Dr. A.K. Aggarwal (Dean, Academic and Student Affairs), for award of Post Graduate Diploma in Hospital and Health Management of the Institute, carried out during the period from 1st March 2014 to 21st May 2014 embodies our original work and has not formed the basis for award of any degree, diploma, associate ship, fellowship, title in this or any other institute or other similar institution of higher learning.

Gazal Sahota

Dr.Gazal Preet Sahota

(Roll no.30 - PGDHM)

IHMR Delhi

مستشفى جي إم سي
GMC HOSPITAL
"Healing through knowledge and wisdom"

ثومبي
THUMBAY

May 21, 2014

To Whom It May Concern

This is to certify that **Dr. Gazal Preet Sahota** holder of Indian Passport Number J6607123 was working in our institution as Management Trainee from 1st March 2014 till 20th May 2014, as a part of dissertation of her P.G.D.H.M program. She has completed the assigned project.

We wish her all the best.

For **GMC Hospital and Research Centre, Ajman**

GMC HOSPITAL & RESEARCH CENTRE
GMCH

THUMBAY MOIDEEN
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ACCREDITATIONS & MEMBERSHIPS

AFFILIATED TO GULF MEDICAL UNIVERSITY

INSTITUTE OF HEALTH MANAGEMENT RESEARCH DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the Dissertation titled " To calculate turnaround time in Obstetrics AND Gynaecology department using Six Sigma Lean GMC Hospital, Ajman" and submitted by Dr. Gazal Preet Sahota (Enrolment Number 30), under the supervision of Dr. A.K. Aggarwal (Dean, Academic and Student Affairs), for award of Post Graduate Diploma in Hospital and Health Management of the Institute, carried out during the period from 1st March 2014 to 21st May 2014 embodies our original work and has not formed the basis for award of any degree, diploma, associate ship, fellowship, title in this or any other institute or other similar institution of higher learning.

Gazal Sahota

Dr.Gazal Preet Sahota

(Roll no.30 - PGDHM)

IHMR Delhi

FEEDBACK FORM

Name of the Student: Dr. Gazal Preet Sahota

Dissertation Organization: Gulf Medical College Hospital, Ajman UAE

Area of Dissertation: Ajman UAE

Attendance: 1st April to 20th May 2014 (100 %)

Objectives – To calculate turnaround time in obstetrics and gynecology department GMC hospital, Ajman by using Six Sigma Lean (DMAIC).

Deliverables-

Estimated the turnaround time in obstetrics and gynecology department

GMC hospital, Ajman by using Six Sigma Lean (DMAIC) and provided recommendations

to reduce the turnaround time which could enhance patient foot fall and satisfaction.

Strengths:

- Has good knowledge of Healthcare industry
- Integrity Values are high
- Good team player and committed

Suggestions for Improvement:

- Improve listening skills
- Pay attention to details
- Openness for new ideas

Signature of the Officer-in-Charge/Organization Mentor (Dissertation) :

P.S.G.S

Date : 20th May 2014
Place : UAE

Executive Summary

The main purpose of this study is to describe the application of the five-phase Six Sigma Define, Measure, Analyze, Improve and Control (DMAIC) approach to streamline process flow of Obstetrics and Gynaecology department at Gulf Medical College Hospital and Research Centre (GMCHRC). In this study key output variable (KOV) was identified as average turnaround time and a list of key input variables (KIVs) were selected, any improvements in the KIVs can improve the KOV values. In the initial phase of this study process mapping was carried out, various interview sessions and self observations made during the study period. Once the process maps were formulated they were discussed with the departments. The next step was to develop a repeatable and reproducible measurement standard operating procedure (SOP). The SOP involved the time the token generated, the time the patient goes to reception and completes the billing and registration, time the patient present to the observation room and leaves the room and time the patient enters the doctors room and leaves the room. This SOP was prepared with the help of the nursing supervisor, billing executive, staff nurses, executive quality assurance and medical coordinator. Using this measurement SOP a sample tracer activity was carried out for 190 patients. (The total sample size was calculated at 95% confidence interval and +/- 5% Margin of Error).The TAT of the OBG outpatients were charted using the individuals moving range control chart method (Montgomery 2004). 9 out of control signals were observed on the chart (above the +2 sigma level). These cases were inspected to find out the reasons for the delay and to identify of these were rare events not of any critical interest. The records were reviewed and no such reasons were identified. Thus they were included in the study. Thus using the SOP turnaround time of the outpatients in the OBG department was 1Hrs 25 Min 80 Sec prior to any intervention. In the analyze phaseCorrelations between each of the patient issues and the proposed system change were estimated. If perceived that the changes will have a high impact on that issue, a high correlation was assigned. The registration takes too long time for insurance and walk-in patients showed high correlation with the manpower requirement and was rated 9 where as the I.T support shoed low correlation with the registration process and it was ranked 1.Statistically significant evidence that the new system improved key output variables (KIVs) was not available until the control phase. However, during the implementation the immediate anecdotal feedback was positive. Due to the limitation of time baseline data for the control phase could not be a part of the study. The documentation of the same is in process and will be recorded.

Introduction

Gulf Medical College Hospital is a teaching hospital, in this international institution it was very important for me to understand and adapted to the work culture in this institution. Thus it was very important for me to understand the protocols and find the gaps in operations. This was a learning experience and especially while working with Obstetrics and Gynaecology department which is the department The Obstetrics and gynaecology department which experiences the most patient footfall due to affordable prices. Around 60 – 70% of the patient foot fall is contributed by obstetrics and gynaecology out of all the outpatient departments in the hospital. The patient foot fall in the OBG departments stands at an average of 250 patients daily with 8 specialist doctors. The high patient foot fall contributes to the long waiting periods which in turn lead to the patient dissatisfaction even after ensuring quality services.The high patient foot fall contributes to the long waiting period, so a study based on collection and analysis of primary data which aimed at identifying specific expectations of internal as well as external customers of Out Patient Department of Obstetrics and Gynecology GMC Hospital, Ajman, UAE. These findings will be further utilized to improve the operational process flow of the Department using Six Sigma Lean (DMAIC) so as to improve the process efficiencies and to reduce variability in outpatient department and enhance patient satisfaction

Departments visited and Participation

- Obstetrics and Gynecology departmentObstetrics and Gynecology department is one of the most patient facing area out of all the outpatient department.
- Around 60 – 70% of the patient foot fall is contributed by obstetrics and gynecology out of all the outpatient departments in the hospital.
- The patient foot fall in the OBG departments stands at an average of 250 patients daily with 8 specialist doctors.
- The OPD timings are 9 to 1 and 5 to 9.
- The department is divided into various rooms-
- 8 Consultation rooms

- One vital sign assessment room.
- Ultrasound room
- CTG room
- Satellite Laboratory.
- Discussion room

ORGANIZATION PROFILE

GMC Hospital, Ajman, UAE was inaugurated on 17th October by H.H Sheikh Humaid Bin Rashid Al Nuaimi- Member of Supreme Council, U.A.E and Ruler of Ajman.

Key Highlights:

- The FirstPrivate University Teaching Hospital in U.A.E.
- GMC Hospital and Research Centre affiliated to Gulf Medical University became operational on 17th October 2002.
- Capacity of 117 beds, and serves patients from more than 150 nationalities.
- GMC Hospital conducts the highest number of deliveries in the private sector in U.A.E.
- Affordable prices and caters to population from all the Emirates**.**

Vision Statement

The vision of GMC Hospital and Research Centre is to be recognized as a leading Academic Healthcare Center providing a high quality of patient centric specialty healthcare services to the community integrated with medical research and clinical training.

Mission Statement

- GMC Hospital and Research Centre is committed to provide ethical patient care focused on patient safety, high quality care and cost effective services.

- GMC Hospital and Research Centre is committed to integrate latest trends in education to produce competent healthcare professionals who are sensitive to the cultural values of the clients they serve.
- GMC Hospital and Research Centre will strive to attain the highest of quality and accreditation standards

CLINICAL DEPARTMENTS

Medical (12)

- Internal Medicine ,Cardiology ,Dermatology ,Gastroenterology ,Psychiatry ,Nephrology ,Neurology ,Family Medicine ,Accident & Emergency, Pediatrics and Neonatology ,Critical care units (ICU, CCU),Physiotherapy**.**

Surgical (8)

- General Surgery ,Urology ,Orthopedics ,Obstetrics &Gynecology Ophthalmology ,Otorhinolaryngology (ENT) ,Anesthesiology , Dental super specialities

Ancillary departments(15)

- Radiology ,Laboratory - Pathology , Hematology ,Microbiology ,Blood Storage Centre ,Pharmacy & Drug Information Center ,Patients Affairs ,Nutrition and Diet ,Patient Education ,Catering ,Biomedical Engineering ,Insurance ,Hospital Informatics ,CSSD ,House Keeping**.**

SPECIAL FEATURES

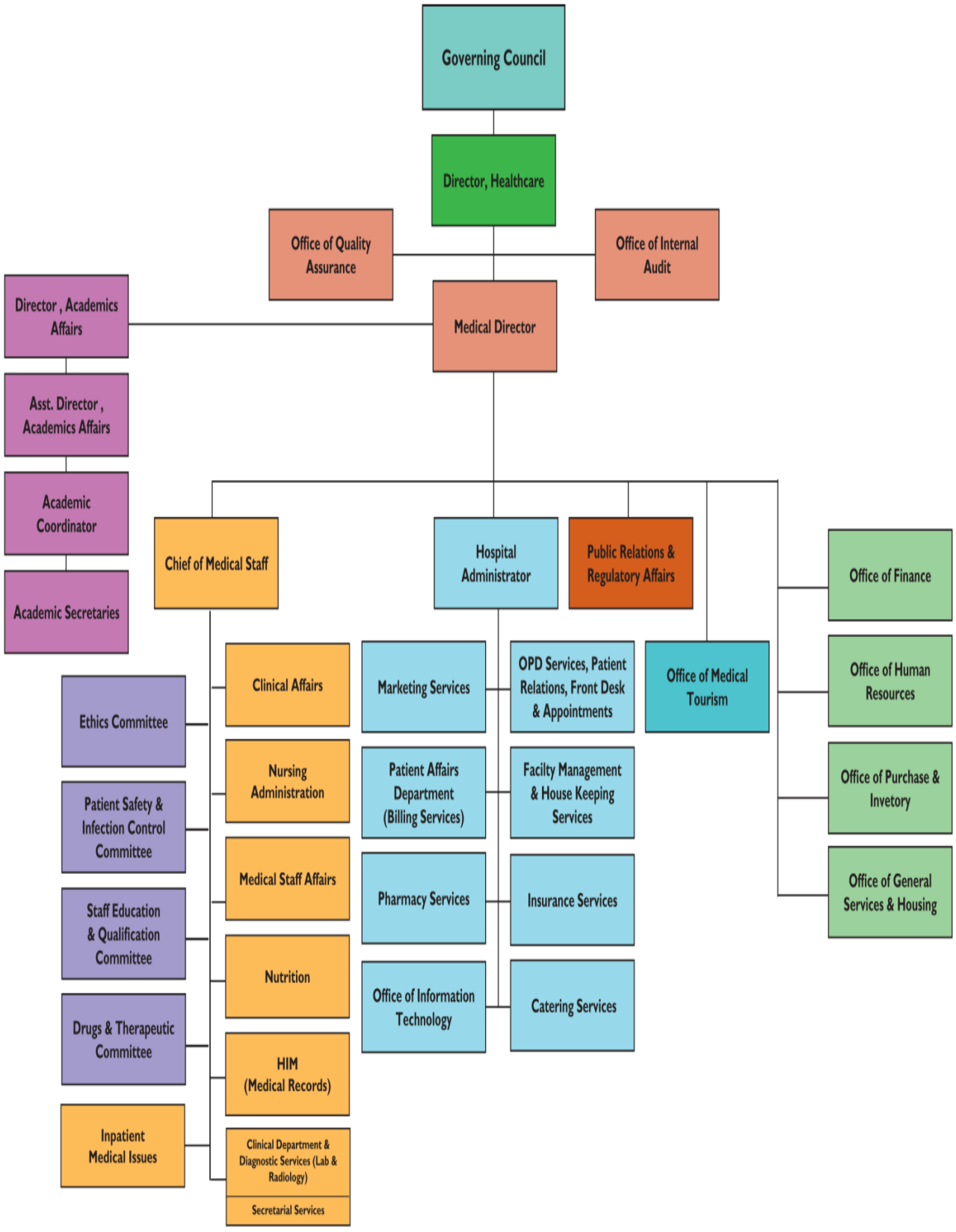
- Wide ranging tertiary care services
- Separate IP & OPD blocks
- Private rooms & deluxe Facilities
- Full range of laboratory diagnosis
- Diagnostic imaging & services

- 24 Hour emergency
- ICU- CCU &Labor Rooms
- Day care facility
- New generation medical electronics
- Traditional architecture with modern facilities
- Doctor on call facility.

AFFILATIONS

- Joint Commission International (JCI)
- Ministry of Health, UAE
- Member - Medical tourism Association
- International Hospital Federation
- Tresmos, International Board of Medicine and Surgery
- Temos Dental certification
- Asian Hospital Federation
- Joint commission International – Member

Organ gram


Governing Council
Director, Healthcare
Office of Quality Assurance
Office of Internal Audit
Director , Academics Affairs
Medical Director
Asst. Director , Academics Affairs
Academic Coordinator
Academic Secretaries
Chief of Medical Staff
Hospital Administrator
Public Relations & Regulatory Affairs
Office of Finance
Office of Human Resources
Office of Purchase & Invetory
Office of General Services & Housing
Office of Medical Tourism
Clinical Affairs
Marketing Services
OPD Services, Patient Relations, Front Desk & Appointments
Ethics Committee
Nursing Administration
Patient Affairs Department (Billing Services)
Facilty Management & House Keeping Services
Patient Safety & Infection Control Committee
Medical Staff Affairs
Pharmacy Services
Insurance Services
Staff Education & Qualification Committee
Nutrition
Office of Information Technology
Catering Services
Drugs & Therapeutic Committee
HIM (Medical Records)
Inpatient Medical Issues
Clinical Department & Diagnostic Services (Lab & Radiology)
Secretarial Services

Description

This study was carried out in the patient affairs department of Gulf Medical College Hospital and Research Centre. The six sigma process of Define, Measure, Analyze, Implement and Control (DMAIC) is a data driven process and its main objective is and enhance patient satisfaction. to The high patient foot fall contributes to the long waiting period, so a study based on collection and analysis of primary data which aimed at identifying specific expectations of internal as well as external customers of Out Patient Department of Obstetrics and Gynecology GMC Hospital, Ajman, UAE. These findings will be further utilized to improve the operational process flow of the Department using Six Sigma Lean (DMAIC) so as to improve the process efficiencies and to reduce variability in outpatient department

Define: Problem selection and benefit analysis

- Identify and map relevant processes.
- Identify stakeholders.
- Determine and prioritize customer needs and requirements.

Measure: Translation of the problem into a measurable form, and measurement of the current situation

- Determine operational definitions for the problem selected.
- Validate measurement systems
- Assess the current process capability.
- Define objectives.

Analyze: Identification of influence factors and causes that address the problems

- Identify potential influence factors.
- Select the vital few influence factors.

Improve: Design and implementation of adjustments to the process to improve the performance

- Quantify relationships between output and input variables.
- Design actions to modify the process or settings of influence factors in such a way that the input variables are optimized.
- Start collecting baseline data from improvement actions.

Control: Empirical verification of the project's results and adjustment of the process and to ensure the improvements are sustainable

- Determine the new process capability.
- Implement control plans.

RATIONALE

- The patient foot fall in the OBG departments stands at an average of 250 patients daily with 8 specialist doctors.
- The high patient foot fall contributes to the long waiting period, so a study based on collection and analysis of primary data which aimed at identifying specific expectations of internal as well as external customers of Out Patient Department of Obstetrics and Gynecology GMC Hospital, Ajman, UAE.
- These findings will be further utilized to improve the operational process flow of the Department using Six Sigma Lean (DMAIC) so as to improve the process efficiencies and to reduce variability in outpatient department and enhance patient satisfaction

REVIEW OF LITERATURE

Reducing Patient Waiting Time in Outpatient Department Using Lean Six Sigma Methodology E. V. Gijo1,* and Jiju Antony2-This article addresses the issue of longer patient waiting time in the outpatient department (OPD) of a super specialty hospital India. Due to longer waiting times at OPD, employees need to be away from the workplace for a longer duration. This problem was addressed through the Lean Six Sigma (LSS) methodology. The process, starting from registration of a patient to dispensing of medicine, was included in the project. The non-value added steps in the process were identified, and actions were initiated. A cause and effect diagram was prepared for high patient waiting time, and causes were validated with the help of data collected from the process. Statistical tools such as Kruskal–Wallis test, Box – Cox transformation, Control charts, normality test, etc., were used within the LSS methodology not only to identify the causes but also to sustain the improvements. As a result of this project, the average waiting time reduced from 57 min to 24.5 min and the standard deviation was reduced to 9.27 from 31.15 min, 17 june20

REDUCING WAITING TIME IN OUTPATIENT SERVICES OF LARGE UNIVERSITY TEACHING HOSPITAL A SIX Sigma approachProf. Dinesh T.A1 , MHA, Amrita Institute of Medical Sciences and Research Centre, kerela,India-This paper presents the results of a project of improving the quality of services provided in an outpatient department of a university hospital in India. The project was conducted on the basis of the six sigma methodology and aimed to reduce waiting times in outpatient cardiology office. Significant reduction in waiting time was achieved in the outpatient services of the Cardiology department by using the six sigma approach. In addition to the overall reduction in waiting time for cardiac medical consultation significant reduction in waiting time for getting the lab results was also achieved. As an off shoot of the study nine registration counters were started, registration forms were modified, ushers were appointed to guide patients, additional staff were appointed to handle the telephones in the Cardiology OPD and they were also taught basic telephone etiquette, dedicated biochemistry analyser was provided for the cardiology department and an alert system was put in place for patients waiting for more than one hour. Further data collection through VOC will help to monitor and control any variance.

Reduce patient waiting time in outpatient phlebotomy department using six sigma, Rajiv Gandhi institute of health sciences Bangalore THE OUT PATIENT PHLEBOTOMY TEAM OF KYUNGPOOK NATIONAL UNIVERSITY HOSPITAL, applied six sigma to reduce patient waiting time. The DMAC was used, 285 patients were questioned to know the root cause analysis. The performance level in the beginning was 2.61 sigma, fishbone diagram was used all possible reasons for extending patient waiting time was captured. Improvement plans including new receptionist, automatic specimen transport system and one phlebotomist was put which decreased the d to 3 in Dec 2007 and 3.35 in July 2008.

4. Reducing laboratory turnaround time outliers can reduce emergency department patient length of stay: an 11-hospital study. Holland LL1, Smith LL, Blick KE-Poor core laboratory performance that causes delays in diagnosis and treatment is an impediment to optimal patient care, particularly in high-volume patient care areas such as the emergency department (ED). To evaluate the impact of laboratory performance on patient care outcomes, we obtained data from 11 hospitals related to laboratory test turnaround time (TAT) parameters and ED patient throughput. We observed that the average length of stay (LOS) in the ED correlated significantly with the percentage of total laboratory outliers ($R2 = 0.75$; $P < .01$) and to a lesser extent the TAT means ($R2 = 0.66$; $P < .01$). Furthermore, improvements in laboratory performance during the study were associated with concurrent decreases in ED LOS. Although in the past, laboratories have focused on TAT means for performance assessment, our observations suggest that a more appropriate method of benchmarking might be to aggressively set clinically driven TAT targets and assess performance as the percentage of results achieving this goal.

5. Reducing waiting time at an emergency department using design for Six Sigma and discrete event simulation. AbdallahA. Abdallah Industrial Engineering Department, German Jordanian University Yousuf M. Alfarah. Design for Six Sigma (DFSS) has been implemented in different industries as a methodology to design or redesign processes. In this paper, DFSS is used to develop a triage process for an emergency department (ED) at a Jordanian hospital. Different performance measures, such as length of stay (LOS) and waiting time (WT), are employed to evaluate the hospital's ED performance before and after the triage process. Discrete event simulation (DES) models were developed using Pro-Model software. The

models have been verified and validated. The results indicate that LOS will be reduced by 34% and WT by 61% after the triage system is implemented, without any additional staff. Moreover, as a result of the triage process, the WT sigma level is improved from 0.66 to 5.18, and the LOS sigma level is improved from 0.58 to 3.09.

OBJECTIVE

General

- This study describes the application of a five-phase Six Sigma define, measure, analyze, improve, and control (DMAIC) approach to the average per patient turnaround time in the outpatient department of Obstetrics &Gynecology and streamline the process flow**.**

Specific

- To determine the process flow of a patient visiting and map relevant process of Obstetrics &Gynecology outpatient department.
- To determine the most common areas of delay in the process flow of Obstetrics &Gynecology outpatient department.
- To identify stake holders and determine and prioritize customer needs and requirements
- To identify key output variable (KOV) and key input variables (KIV) which are involved in the discharge process

METHODOLOGY

Type of Study

- The study will be Cross sectional study, comprising of collection and analysis of primary data.

Study site

- GMC HOSPITAL, Ajman, United Arab Emirates**.**

Study Group

- Doctors, Patient, Nurses, Reception, laboratory staff, Radiology staff, Insurance staff, Pharmacy staff of GMC Hospital, Ajman, UAE**.**

Study period

- One and half month.

Sample

- Total estimated population based on monthly patient foot fall is 7500
- Sample size = 200(95% confidence level and 5%confidence interval).

Study Tool

- Observation, Patient tracing interviews with the patient care providers, brain storming sessions with nurses and resident medical officers

Methodology in testing

Six sigma tools such as the Statistical process control (SPC) Charting, Process Mapping and cause effect matrices along with software's such as QI Macros, Microsoft Visio, Microsoft Excel were used.

Data Analysis

DEFINE PHASE

The project was carried out in the Obstetrics andGynecology Outpatient Department at Gulf Medical College Hospital and Research Centre (GMCHRC).

- The management and medical director have identified the turnaround time (TAT) to be a critical issue as the department has highest patient footfall.
- Thus the primary goal of this project was to reduce the TAT of patient care in the Obstetrics andGynecology Outpatient Department and to increase patient satisfaction.
- A team which consisted of researcher (Dr.GazalSahota), Medical Administrator, Member forms the Quality Assurance nursing supervisor, staff nurses and front office staff was formed to carry out the project.
- The key output variables or the study Y was the turnaround time, which was identified as from when the patient takes the token from the token machine until the patient leaves the physician's room).

MEASURE PHASE

- This phase involves documentation and evaluation of the system that exists prior to any changes that the team might suggest.
- Thus as a first step of the study, an approximate process map for the OBG outpatient department was developed. (Figure 1)
- The next step was to develop a repeatable and reproducible measurement standard operating procedure for the process.
- The SOP involved the time the token generated, the time the patient goes to reception and completes the billing and registration, time the patient present to the observation room and leaves the room and time the patient enters the doctors room and leaves the room.

  This SOP was prepared with the help of the nursing supervisor, billing executive, staff nurses, executive quality assurance and medical coordinator.

(The total sample size was calculated at 95% confidence interval and +/- 5% Margin of Error).The TAT of the OBG outpatients were charted using the individuals moving range control chart method (Montgomery 2004).

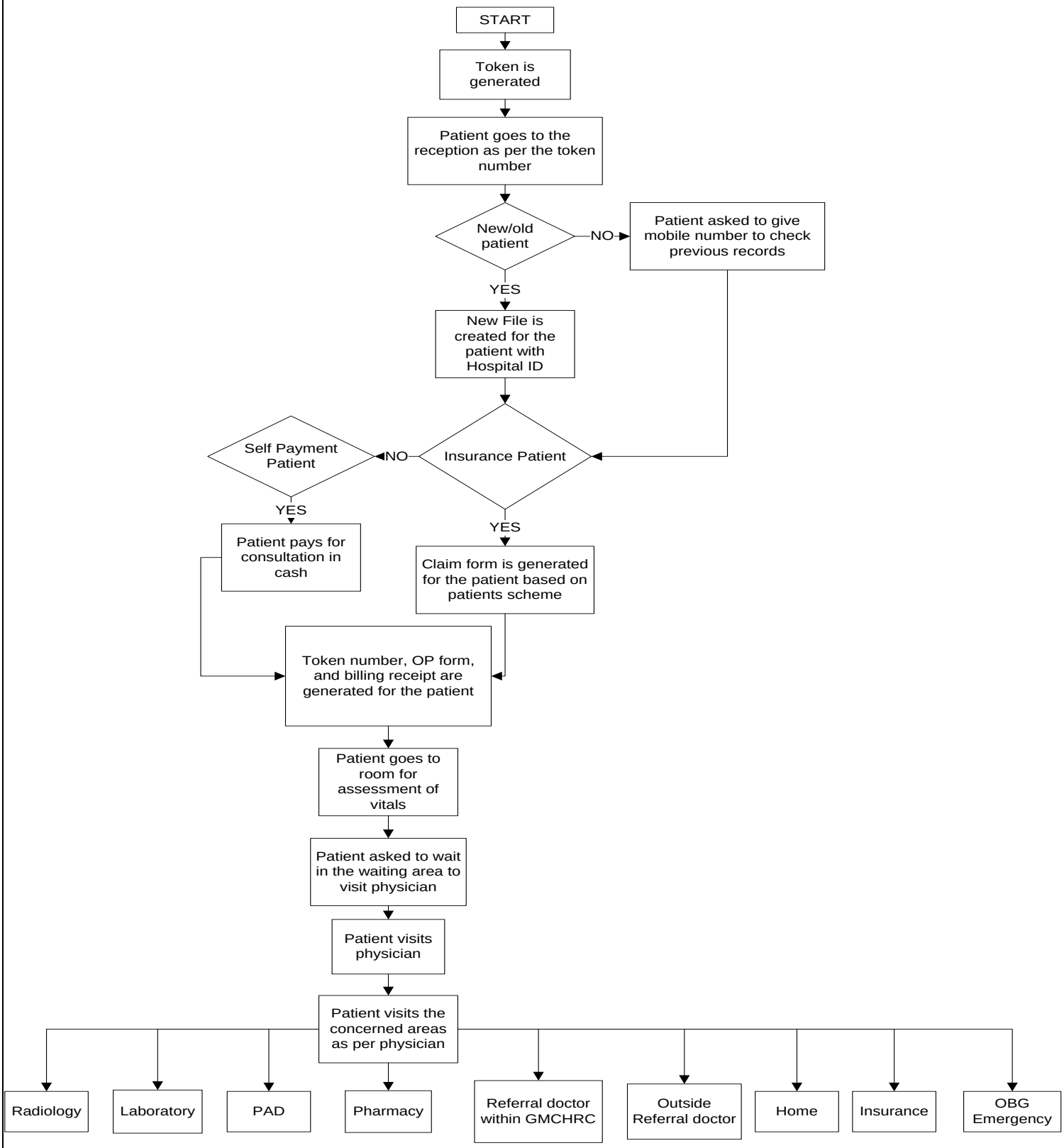
Figure 1.The reason we chose individuals chart is that there was no basis for rational sub grouping, because of the irregular nature and small volume of patient discharges involved in our study subsystem.

9 out of control signals were observed on the chart (above the +2 sigma level). These cases were inspected to find out the reasons for the delay and to identify of these were rare events not of any critical interest.

The records were reviewed and no such reasons were identified. Thus they were included in the study.

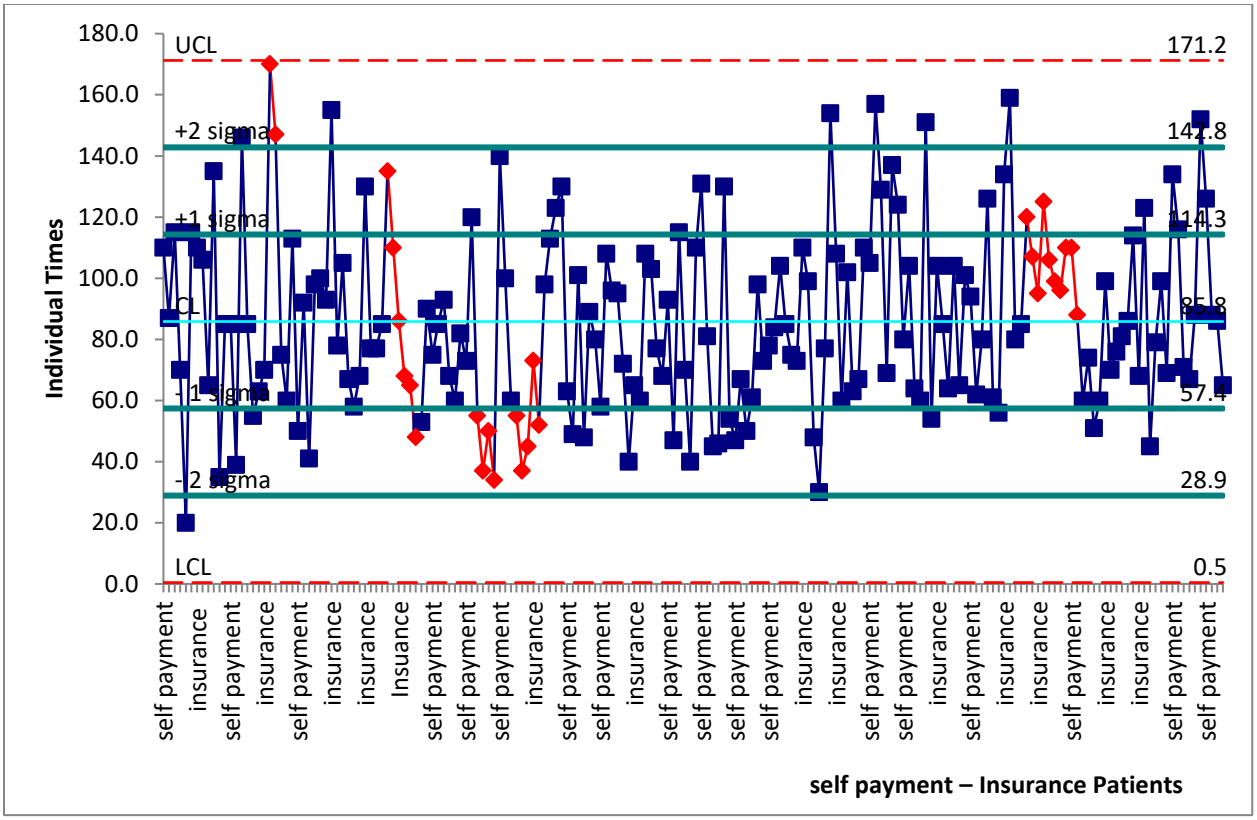
Thus using the SOP turnaround time of the outpatients in the OBG department was 1Hrs 25 Min 80 Sec prior to any intervention.

Flowchart


START
Token is generated
Patient goes to the reception as per the token number
New/old patient
NO
Patient asked to give mobile number to check previous records
YES
New File is created for the patient with Hospital ID
Insurance Patient
NO
Self Payment Patient
YES
Patient pays for consultation in cash
YES
Claim form is generated for the patient based on patients scheme
Token number, OP form, and billing receipt are generated for the patient
Patient goes to room for assessment of vitals
Patient asked to wait in the waiting area to visit physician
Patient visits physician
Patient visits the concerned areas as per physician
Radiology
Laboratory
PAD
Pharmacy
Referral doctor within GMCHRC
Outside Referral doctor
Home
Insurance
OBG Emergency

Using this measurement SOP a sample tracer activity was carried out for 190 patients.

Individuals Moving Range Chart



- Figure 1- 9 out of control signals were observed on the chart (above the +2 sigma level). These cases were inspected to find out the reasons for the delay and to identify of these were rare events not of any critical interest. The records were reviewed and no rare events were identified. Thus they were included in the study. Thus using the SOP turnaround time of the outpatients in the OBG department was 1Hrs 25 Min 80 Sec prior to any intervention.

Analyze Phase

The key output variables (KOVs) were identified as Average turnaround time. Thus the analyze phase involves developing a list of key input variables (KIVs) or project "Xs" on the basis of their relation with the "KOVs". The "KIV" are selected on the basis of how these variables can improve the "KOV. The "KIVs" were selected using a cause-and-effect matrix related to this process; the C&E matrix was selected as analysis method to open up possibilities for system improvement. It was derived from conversations with members of the Quality Assurance nursing supervisor, staff nurses and front office staff who were familiar with the process. A list of possible patient issues and rates their importance on a scale of (1–10, with 10 being highest importance to the patient and 1 being lowest). After identifying the issues a list of possible system changes or improvements to the issues were identified**.**

S.No	Patient issues/areas for improvement	Ratings by experts	I.T Support	Signages at patient touch points	Training Skills	Communication with the patients	Facility Management	Health education	Language translators	Manpower requirement
1	The registration takes too long time for insurance and walk-in patients	10	1	5	7	6	1	1	1	9
2	Inadequacy of staff	9	1	1	1	1	1	1	3	9
3	I.T problems	6	9	2	5	1	1	1	1	1
4	No proper signage's	9	7	9	1	6	1	1	1	2
5	No coordination between the appointment desk	8	6	1	9	8	1	1	1	4

	and reception									
6	**No communication with the patients**	**5**	**1**	**7**	**8**	**9**	**1**	**1**	**1**	**1**
7	**No sitting arrangement for patients**	**8**	**1**	**1**	**1**	**1**	**9**	**1**	**1**	**1**
8	**No health education is provided**	**7**	**5**	**1**	**7**	**8**	**2**	**9**	**7**	**4**
9	**Calling devices are not used**	**9**	**7**	**1**	**9**	**6**	**1**	**1**	**1**	**1**
10	**No translators**	**5**	**1**	**1**	**1**	**8**	**1**	**1**	**9**	**5**
11	**No staff is there to provide request approval for ultrasound if the doctor is not available**	**7**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**8**
Factor Rating Number			**307**	**352**	**380**	**398**	**154**	**139**	**171**	**358**
				2nd priority	**1st priority**					**2nd priority**

Figure 2- Correlations between each of the patient issues and the proposed system change were estimated .If perceived that the changes will have a high impact on that issue, a high correlation was assigned. The registration takes too long time for insurance and walk-in patients showed high correlation with the manpower requirement and was rated 9 where as the I.T support shoed low correlation with the registration process and it was ranked 1.The factor rating numbers shown in the bottom row of Figure 4 were designed to prioritize the possible system changes based on importance to patients. They are derived from a summation of the products of correlations with importance ratings.

IMPROVE PHASE

Statistically significant evidence that the new system improved key output variables (KIVs) was not available until the control phase. However, during the implementation the immediate anecdotal feedback was positive. Due to the limitation of time baseline data for the control phase could not be a part of the study. The documentation of the same is in process and will be recorded.

CONTROL PHASE

Due to time constraint the control phase was not able to be conducted.

CONCLUSIONS AND RECOMMENDATION

- Provision of signage's. -signage’s should be provided at the reception like kindly take the token for reception both in English and Arabic.
- Manpower requirement- staff at the reception should be provided and one staff nurse for CTG and vital sign assessment during 1 to 5 pm.
- Training skills- training skills should be provided to doctors and nursing staff foe the calling devices that are installed.
- Communication skills- nursing staff should be trained to give all the viable information to the patients regarding doctors not available.
- Facility management- seating area should be enlarged and more chairs should be installed.
- Health education- LCD’s installed should provide information to the pregnant ladies and antenatal measures or how to reduce weight after pregnancy.
- Language translator- Arabic translator should be provided to doctors.
- Start OPD timings on time.- as the OPD timings are 9 am to 1pm and 5 pm to 9 pm but in the morning OPD starts around 10:30 am.

REFERENCES

- E. V. Gijo1,* and Jiju Antony2,Reducing Patient Waiting Time in Outpatient Department, Using Lean Six Sigma Methodology.
- Prof. Dinesh T.A1 , MHA, Ph.D Prof. Dr.Sanjeev SINGH1 , DCH, M.Phil ,Prem NAIR1 , MBBS, MD ,Remya T R1 , MHA , Amrita Institute of Medical Sciences and Research Centre, kerela,India,Reducing waiting time outpatient services of large university teaching hospital.
- Rudraswamy S, Sampath N,Reduce patient waiting time in outpatient phlebotomy department using six sigma, Rajiv Gandhi institute of health sciences Bangalore**.**
- **Holland** LL1, Smith LL,Reducing laboratory turnaround time outliers can reduce emergency department patient length of stay: an 11-hospital study,goal.PMID: 16203280 [PubMed - indexed for MEDLINE.
- Abdallah Industrial Engineering Department, German Jordanian University Yousuf M. Alfarah,,Reducing waiting time at an emergency department using design for Six Sigma .
- www.**gmchospital**.com/**ajman**/index.php

Annexure 1: Format of data collected

Doctor Name	Type of patient Appointment /Walk In	Mode of payment (self/ insurance)	1. Time token generated	2. Time the patient is at the reception	(2-1)	3. Registration and billing completed	(3-2)	4. Time the patient enters the observation room	(4-3)	5. Time the patient leaves the observation room	(5-4)	6. Time the patient enters the doctor's room	(6-5)	7. Time the patient leaves the doctors room	(7-6)	EXIT	Total time taken