University of New Haven

QUALITY ANALYSIS

OPTIMIZING PATIENT EXPERIENCE
A SIX SIGMA GREEN BELT APPROACH

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April 10, 2024

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1. INTRODUCTION

This report presents the findings and proposed actions of a Six Sigma project undertaken at the Greenwich Medical Clinic. The project, focused on optimizing patient HRT consultation experience and operational efficiency.

Over the course of the project, DMAIC (Define, Measure, Analyze, Improve, Control) methodology has been applied to thoroughly understand existing processes, identify opportunities for enhancement, and develop targeted solutions. The insights gained through this process have provided valuable insights into the root causes of inefficiencies and areas for improvement within the clinic.

As the project nears its conclusion, this report will outline the key findings from the Define, Measure, and Analyze phases, providing a comprehensive overview of the current state of operations at the clinic. Additionally, the report will present a detailed proposal for improvement initiatives to be undertaken in the Improve phase, aimed at addressing identified issues and driving meaningful change.

Through the implementation of these proposed improvements, the Greenwich Medical and Aesthetic Clinic aims to enhance patient satisfaction, streamline operations, and ensure the delivery of high-quality care. The insights and recommendations outlined in this report will serve as a roadmap for ongoing improvement efforts, laying the foundation for continued success and excellence in patient care.

2. DEFINE

During the Define phase of the Six Sigma project at the Clinic, the focus was on clearly defining the scope, objectives of the project. This phase involved the following key activities:

1. Project Scope Definition
2. Objective Setting
3. Stakeholder Identification
4. Project Charter Development

2.1. Project Scope Definition

The scope of the Six Sigma project at the clinic encompasses key areas that directly impact patient experience and operational efficiency. Specifically, the project will focus on addressing the issues shown in Table 1 below.

Table 1 - Project Scope Details

Objective	How to Achieve
Optimize time on patient visit from check-in to check-out	Optimization of patient wait times during various stages of clinic processes, from admission to discharge.
	Development and implementation of standardized treatment protocols to ensure consistent and high-quality care delivery, standard follow-ups, thereby improving treatment adherence rates among staff members
	Addressing communication gaps and inconsistencies among clinic staff members by establishing clear communication channels and promoting regular team meetings
	Leveraging available technology solutions to streamline clinic operations, such as electronic medical records systems, appointment scheduling software, and telehealth platforms

2.2. Objective Setting

The project scope for the Six Sigma initiative at the Greenwich Aesthetic Clinic encompasses four main objectives aimed at enhancing patient experience and operational efficiency. The objective corresponds to specific key focus areas within the clinic's operations that require improvement:

- Reduce patient wait times throughout clinic processes.
- Standardize treatment protocols to improve treatment adherence.
- Reduce waste of time on patient procedure
- Enhance communication effectiveness among staff members.
- Improve utilization of technology to streamline clinic operations.

2.3. Stakeholder Identification

Clinic Management:

- Clinic Manager: Oversees daily operations, staff management, and strategic planning.
- Accountant: Manages financial aspects, budgeting, and accounting procedures for the clinic.

Staff Members:

- Doctor: Provides medical expertise, diagnoses, and treatments to patients.
- LPN (2) and Medical Assistant (1): Assist the doctor in patient care, administer treatments, and ensure smooth clinic operations.
- Quality Intern: Engaged in the Six Sigma project as part of an internship role together with a team of industrial engineer masters students from University of New Haven. They were responsible for assisting in project implementation, data analysis, and process improvement initiatives.

Patients:

- Patients: Individuals seeking medical and aesthetic treatments at the clinic, whose experiences and satisfaction are essential for the success of the clinic.
  Regulatory Bodies:
- Relevant regulatory agencies and accreditation bodies: Ensures compliance with healthcare regulations and standards, guiding the clinic's operations and quality of care.

2.4. Project Charter Development

Project Charter

Medical and Aesthetic Clinic

Problem Statement

The Greenwich Aesthetic Clinic faces challenges in operational efficiency and patient satisfaction due to inefficiencies in clinic processes. These inefficiencies manifest as prolonged patient wait times, inconsistent treatment adherence, communication gaps among staff members, and underutilization of available technology. As a result, the clinic's ability to deliver timely and high-quality care is compromised, leading to potential financial implications for the clinic. Addressing these challenges is critical to improving overall clinic performance, enhancing patient experience, and ensuring the clinic remains competitive in the healthcare market.

Business Case & Benefits

Enhanced efficiency and efficacy in clinic operations would improve timeliness and uphold a high standard of regulatory compliance at the Clinic. Operational improvements could translate into monetary benefits by optimizing resource utilization, minimizing errors, and reducing administrative overhead. Consequently, this would contribute to increased revenue and sustained growth for the clinic.

Goal Statement

The goal of the Six Sigma project at the Greenwich Medical and Aesthetic Clinic is to implement targeted operational improvements that enhance patient experience, streamline clinic processes, and ensure consistent delivery of high-quality care. By reducing patient wait times, improving treatment adherence rates, enhancing communication among staff members, and optimizing technology utilization, the clinic aims to achieve sustainable improvements in operational efficiency and effectiveness. Ultimately, the goal is to elevate the overall clinic performance, maximize patient satisfaction, and maintain a competitive edge in the healthcare industry.

Timeline

Phase	Planned Completion Date	Actual
Define:	March 25th	April 2nd
Measure:	April 10th	April 15th
Analyze:	April 18th	April 23rd
Improve:	April 27th	May 4th
Control:	June 2nd	July 2nd

Scope In/Out

In Scope:	Out of Scope:
Optimization of patient wait	Patient census management.
Standardization of treatment protocols.	Technology solutions requiring significant financial investment.
Addressing communication gaps among staff.	External due dates imposed by regulatory bodies or external stakeholders.
Leveraging available technology solutions.	Quality improvement initiatives outside the Quality Management framework.

Team Members

Position	Person	Title	% of Time
Team Lead	Victhoria Lima		25%
Sponsor	University of New Haven		1%
Team Member	Candice D		25%
Team Member	Areli V		15%

Key Take Away: The clinic is growing in size and programs and need for more Quality Improvement Time.

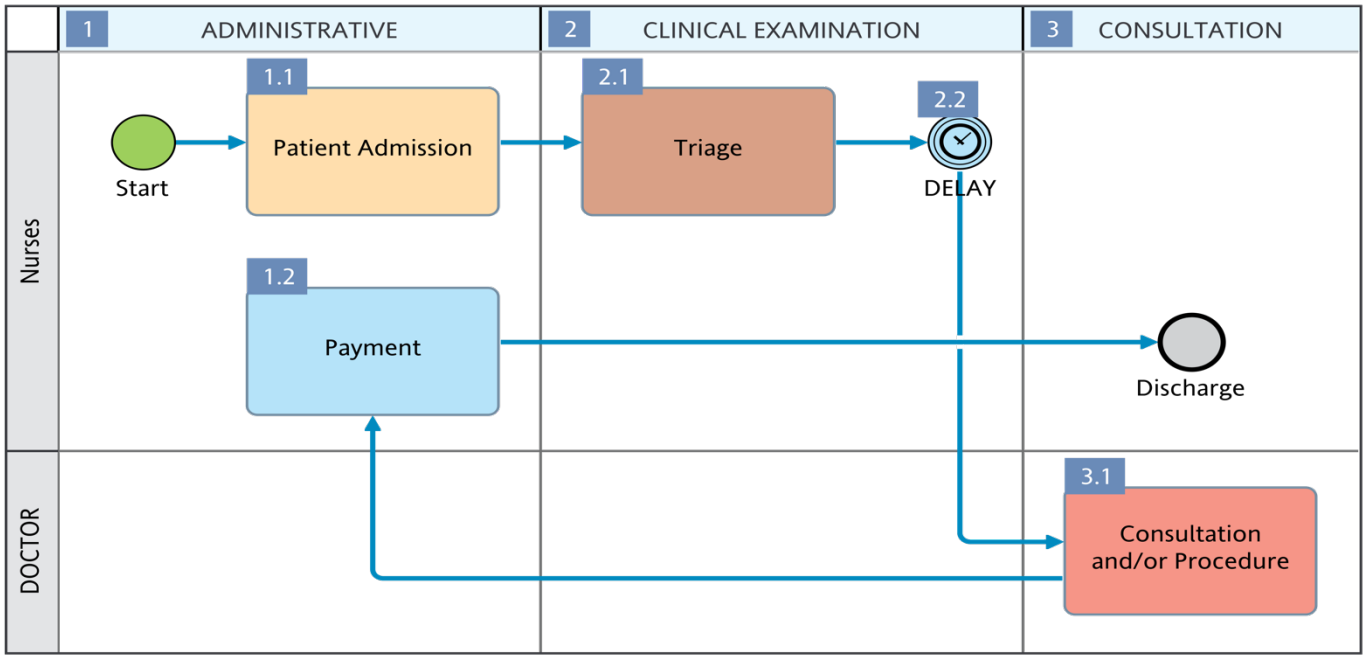
3. MEASURE

In the Measure phase of our Six Sigma project at the Greenwich Aesthetic Clinic, we transition from defining project objectives to quantifying our current performance. This crucial phase is to establish a clear baseline by gathering data on key metrics related to patient care, operational efficiency, and staff effectiveness. Measuring various aspects of our clinic's operations, we gain insights into areas of strength and areas requiring improvement.

3.1. Clinic Current Flow

Inconsistent triage procedures, and late patient consultations are hurtful for the clinic flow. The data will be collected on-site at the clinic, where we will be able to see the clinic flow operation to find the issues related to this step. Leveraging historical data spanning patient visits and treatment outcomes, it was analyzed key performance metrics, including appointment scheduling efficiency, triage flow, treatment duration. Through data collection and analysis, we establish a robust baseline against which to measure the impact of our improvement efforts.

Clinic Flow



Picture 1 - Process Map of the Clinic Workflow;

Table 2 – Clinic Flow Data Collection Strategy

Patient	Procedure	Expected Min Duration (min)	Expected Max Duration (min)	Total Duration (min)	Successful
#1	Type of Procedure	The smallest time that the appointment should take	Maximum time the appointment should take	Real duration of the appointment.	Appointment was on time? Success. No otherwise.

It was collected data of 2 days of a clinic flow. The clinic has a range of treatments and each treatment has specific steps. Even though we measured a few other treatments we focused for this project on the HRT consultation treatment.

See below a sample of 19 consultation collected on the current duration of the procedure.

Table 3 - Sample Data

Patient	Procedure	Expected Min Duration (min)	Expected Max Duration (min)	Total Duration (min)
1	HRT Consultation	45	70	86
2	HRT Consultation	45	70	62
3	HRT Consultation	45	70	95
4	HRT Consultation	45	70	46
5	HRT Consultation	45	70	83
6	HRT Consultation	45	70	81
7	HRT Consultation	45	70	76
8	HRT Consultation	45	70	76
9	HRT Consultation	45	70	72
10	HRT Consultation	45	70	75
11	HRT Consultation	45	70	81
12	HRT Consultation	45	70	89
13	HRT Consultation	45	70	91
14	HRT Consultation	45	70	88
15	HRT Consultation	45	70	66
16	HRT Consultation	45	70	78
17	HRT Consultation	45	70	56
18	HRT Consultation	45	70	88
19	HRT Consultation	45	70	57
19	HRT Consultation	45	70	84

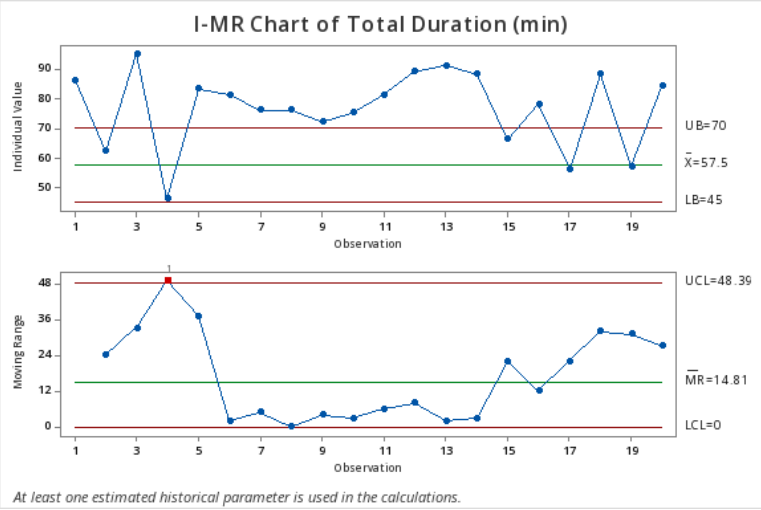
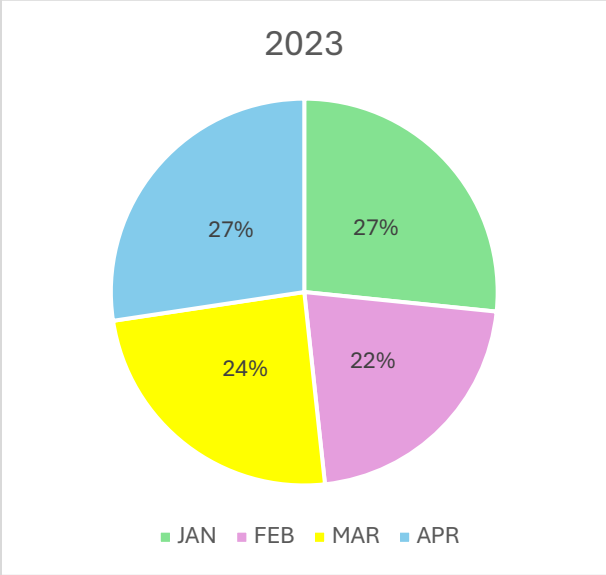


Chart 1 - Current Flow I-MR Chart

DMAIC

A quantity of 11 patients from the 19 passed the maximum time that the appointment should have taken. From check-in to check-out patients are taking an average of 76.5 min, which is 6 minutes over the time limit that an HRT consultation should take. Note that this is only for one procedure, not counting the other procedures the clinic offers.

Data was collected to check the clinic's flow and the number of patients seen on the same months in 2023 and 2024. The months were January, February, March, and April. It is showed the clinic had no improvement on the amount of patients seeing even though all the investment in new technologies. For that reason, it is important to analyze the root cause that will be done on next part.



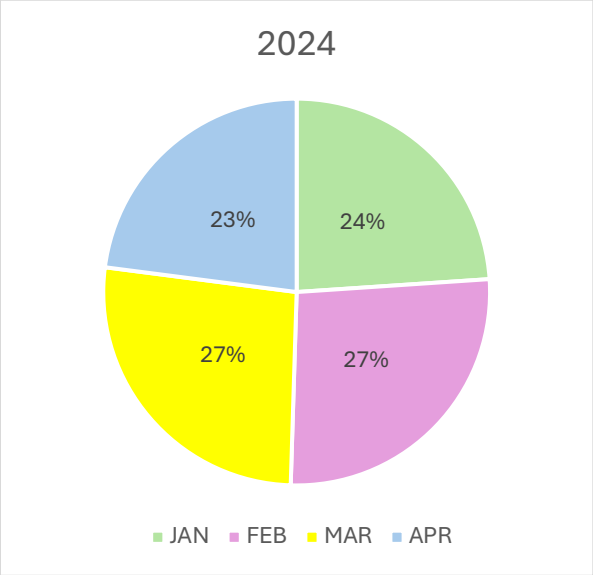


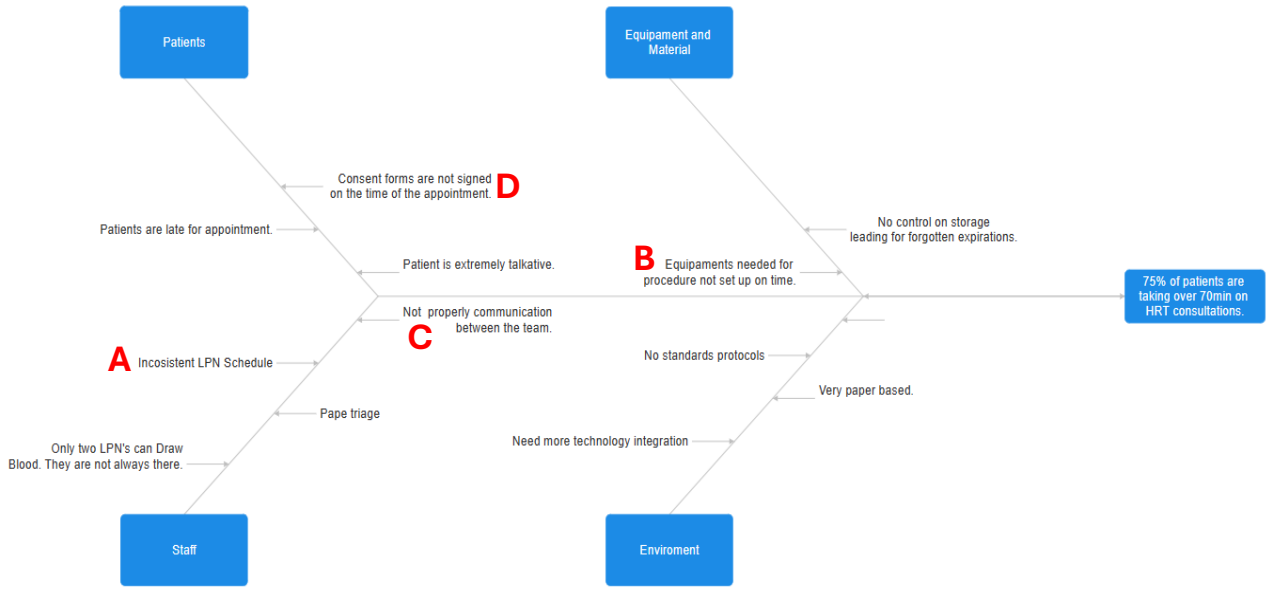
Chart 2 - Percentange of patients seeing in 2023 (Jan-Apr) **Chart 3 -** Percentange of patients seeing in 2023 (Jan-Apr)

Table 4 – Problem Statement and Target

Problem Stament	Target
A total of 75% of HRT consultation took more than 70min on consultation because of staff delays such as: consent forms signed, communication with doctor, room set up.	Reduce time over 70min from check in to check out in 36%

4. ANALYZE

4.1. Cause and Effect – Fishbone Diagram



It was identified the root cause by the team. The root causes are listed as A, B, C and D above.

Table 5 – Root Cause

Potential Root Cause	How to Achieve
A. Inconsistent LPN schedule	LPN's have inconsistent schedules and without an optimized patient schedule makes difficult for clinic to see patients faster.
B. Equipment not set up before every procedure	LPN's do not keep track of next appointment and set up equipment is for next patient on time.
C. No properly communication between team	Team has no fixed meeting time so everyone can be on the same page since all have different schedules.
D. Consent forms are not signed on the time of appointment	Patients get there on time or late and consent are not signed. Doctor cannot see patient if consent forms are not signed.

Table 6 – Clinical root cause percentages

Root Cause	% Present
A	35
B	25
C	15
D	25

Next steps would be showing all the information analyzed to the sponsor to sign so we can improve and then control.

4.2. IMPROVE PROPOSAL

In discussions regarding potential improvements, the team recognized the significance of simple actions in effecting process changes for improvement. During the Analyze phase, a critical finding emerged: LPN's inconsistent schedule affects the clinic flow. The lack of equipment preparation before procedures impacts clinic flow. No properly communication between staff affects clinic flow, especially with the inconsistent schedule. Patients were occasionally admitted without signed consent forms ,posing a considerable liability for the clinic.

To address this, it is proposed standardizing the admission process for each procedure, but for this process the HRT consultation. Check table below to see root cause and solutions

Table 7 -Root Causes and Solutions

Root Cause	Solution
A. Inconsistent LPN schedule	Development of fixed schedule for LPN and medical assistants ensuring there is always an LPN in the clinic.
B. Equipment not set up before every procedure	Before every procedure a checklist of equipment must be made to make sure everything is set up on time.
C. No properly communication between team	Regular meetings with the staff and a tracking technology for the next day staff. Training techniques for new technologies.
D. Consent forms are not signed on the time of appointment	Standardized reminder telling patient to come 15-20min earlier to sign consent forms. If consent forms are not signed doctor cannot see patient.

5. REFERENCES

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