Analysis of Taubman Pediatric Multispecialty Clinic

University of Michigan Program & Operations Analysis
Final Report

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Executive Summary

The Taubman Pediatric Multispecialty Clinic, a division within the University of Michigan’s Taubman Health Center Clinic, is perceived to have long patient wait times which results in low patient satisfaction. Therefore, the Medical Director of the Taubman Pediatric Multispecialty Clinic asked the student project team to identify characteristics that are common to clinics with low patient wait time and high patient satisfaction throughout the Clinic’s 15 specialty clinics. To determine these best practices to apply to all the specialty clinics, the team analyzed the tasks of physicians and clinic support staff. As requested by the Medical Director, the primary focus of the study was the tasks of physicians and clinic support staff of predetermined efficient physician clinics within the Taubman Pediatric Multispecialty Clinic’s non-multidisciplinary specialty clinics. After examining the current situation, the team developed a list of best practices to minimize patient wait time and maximize patient satisfaction.

Background

Specialty clinics at the Taubman Pediatric Multispecialty Clinic are classified as multidisciplinary or non-multidisciplinary. Best practices of non-multidisciplinary clinics, which consist of only a physician and a nurse, were the focus of this study. Along with the broad range of patients at the Taubman Pediatric Multispecialty Clinic, there is only one check-in and check-out location for all patients. Due to the wide-ranging type of patients and the single check-in and check-out location, it is perceived by the Taubman Pediatric Multispecialty Clinic’s administration that patients are estimated to wait 1-2 hours in waiting and exam rooms before a physician starts care. Clinics become congested with patients as a result of the long patient wait times, causing frustrated patients and dissatisfied physicians. Lastly, there is no standard procedure if the physician or nurse enters the patient’s exam room first to initiate the appointment.

Methodology

The team performed five types of tasks to identify best practices across non-multidisciplinary clinics to decrease patient wait time and improve patient satisfaction: interviewed, observed, implemented time studies and surveyed patients, analyzed data, and conducted a literature search.

Interviewed. The team interviewed nine physicians who were identified by the project clients to run efficiently. Questions were related to the physicians’ perception on what factors affect low patient wait time, how the physicians manage “no shows” and late patients, and what techniques physicians use to stay on schedule and work around unexpected circumstances.

Observed. For a total of 44 hours, the team observed physicians who were identified by the project clients to be efficient. Observations were made on the method physicians used to run their clinics from the beginning of the patient’s appointment.

Implemented Time Studies and Surveyed Patients. The team conducted 521 time studies, 285 of which were usable, over the course of two weeks to validate the perceived efficient physicians.
Filled out by the patients themselves, the time study recorded the sequence and duration of the physician and clinic support staff attending to the patient. The time study also served as a patient satisfaction survey and asked patients to rate their experience.

**Analyzed Data.** The data analysis comprised of a statistical analysis using data from the time studies to identify which physician techniques are most efficient and result in the lowest patient wait time and highest patient satisfaction.

**Conducted a Literature Search.** The team conducted literature searches using academic databases and peer-reviewed publications for material relevant to clinical best practices. Information regarding how to best measure physician performance was also gathered during the literature reviews. The main finding was that “how fast patients are seen may distinguish more about a practice or doctor’s performance than…overall patient satisfaction.”

**Findings and Conclusions**

**Interviews and Observations.** Through interviews and observations, the team gathered information on general practices performed by predetermined efficient physicians. A summary of general practices are highlighted below.

- Physicians perceive that return patients wait on average for 15 minutes before start of appointment and new patients wait on average for 30 minutes.
- All physicians see around the same number of patients: 10 patients per clinic.
- Some physicians have a set procedure for the sequence the clinic support staff enters the patient’s exam room to initiate the appointment, while others do not.
- Certain physicians ask patients the same questions previously asked by a nurse to attain more detailed information, while other physicians brief with the nurse before seeing patients to avoid repeating questions.
- Most physicians print out only required forms and notes for appointment, while a few print all relevant documentation to avoid looking up forms on the computer in exam room.
- There is a mix of physicians who schedule extra time in clinic schedules to allow for a period to read up on patient history and who do not.
- Some physicians have set cut-offs for attending to late patients, while others will see late patients based on the flow of the clinic that particular day.
- Certain physicians will enter a patient’s exam room multiple times, while other physicians will never enter a patient’s exam room more than once.

**Time Studies.** Time studies allowed for the validation of the perceived efficient physicians and permitted the team to use the best practices of the validated physicians as recommendations. By conducting time studies and patient surveys, the team had more insight into the actual wait time and patient satisfaction. Results from the data analysis showed that:

- Perceived efficient physicians were validated with time study
- For all physicians, one in four patients currently wait at least one hour before seeing a physician.
- On average, patients seeing an efficient physician wait less time than those patients seeing an inefficient physician.
• Clinic support staff spends the same amount of time with patients regardless of physician.
• Medical students do not affect the efficiency of a clinic
• There is no correlation between patient wait time and patient satisfaction

Recommendations

The best practices of efficient physicians were divided into three main categories: non-value added work, patient preparation, and clinic flow.

Non-Value Added Work. Efficient physicians should perform certain tasks, such as staying aware of the amount of time spent with the patient, to make sure that clinic time was used effectively. Physicians’ also should ensure immediate patient care by arriving on time for clinic duty.

Patient Preparation. Efficient physicians should schedule extra time to read the next patient's history to ensure they were prepared for upcoming appointments. Physicians should analyze notes from previous appointments, develop templates for returning patients, and determine required staff for patient's care.

Clinic Flow. Efficient physicians should work closely with medical assistants, allow time for briefing between physician and clinic support staff, avoid overbooking, attend to late patients only based on the flow of clinic, and ensure only one visit to patient exam room.
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Introduction

The Taubman Pediatric Multispecialty Clinic is part of the University of Michigan’s Taubman Health Center Clinic. Certain specialty clinics within the Taubman Pediatric Multispecialty Clinic have long patient wait times and hence have low patient satisfaction. Therefore, the Medical Director of the Taubman Pediatric Multispecialty Clinic would like to identify particular common best practices in specialty clinics with low patient wait time and high patient satisfaction and implement these practices across all of the multispecialty clinics. The Medical Director asked the team to study the tasks of the physicians and the clinic support staff (i.e. nurses, medical assistants and clinic coordinators) to discover the best practices in well-run non-multidisciplinary clinics.

The main project focus was to identify wasted work caused by the task sequence of physicians and clinic support staff that impact patient wait time in non-multidisciplinary clinics. The team analyzed the flow of the patients, physicians, and clinic support staff along with the allocation of responsibility for elements of patient care among the clinic support staff. Through interviews, surveys and work flow analyses, the team identified best practices relating to the sequence in which the physicians and clinic support staff enter the patient’s room at the start of an appointment. Based on this analysis, the team has recommended flow improvements for the clinic support staff in non-multidisciplinary clinics to minimize patient wait times and increase patient satisfaction. The purpose of this report is to present the team’s approach and methodology, findings and conclusions, recommendations, and expected impact of the project.

Background

The Taubman Pediatric Multispecialty Clinic is an active unit that consists of 15 specialties containing both multidisciplinary and non-multidisciplinary clinics. Non-multidisciplinary clinics contain only a physician and nurse. Multidisciplinary clinics have additional support staff members such as dietitians, psychologists and social workers. In addition to the extensive variety of patients seen at the Taubman Pediatric Multispecialty Clinic, a common support staff is used for patient check-in and -out. In certain specialty clinics, patients consistently wait 1-2 hours in the waiting and exam rooms before being seen by a physician. Long wait times create traffic jams throughout the clinic, resulting in unhappy patients and physicians. Some specialty clinics see similar volumes of patients with significantly less wait time and fewer patient complaints. Additionally, the clinic support staff has no standard procedure for the sequence once patients enter an exam room. Therefore, this study was conducted to identify the common characteristics and best practices of those specialty clinics that perform efficiently, so the patient experience can be improved throughout the Taubman Pediatric Multispecialty Clinic.

Key Issues

The following key issues, as indicated by the Medical Director, are driving the need for this project:

- Patients frustrated with 1-2 hour wait times
- Physicians are dissatisfied with wait times
- Clinic support staff has no standard sequence procedure once patients enter exam room
Goals and Objectives

The goal of this project was to identify best practices across predetermined efficient non-multidisciplinary to minimize patient wait time and improve patient satisfaction. To achieve this goal, the team developed recommendations to address the following objectives:

- Provide a list of characteristics common in best practices
- Identify non-value added work
- Decrease patient wait time while increasing patient throughput
- Increase patient satisfaction

Project Scope

This project included only the Taubman Pediatric Multispecialty Clinic, which has multiple specialty clinics consisting of physicians with a specific area of medical expertise. The scope of the project covered a patient’s progress through the clinic after the patient checks-in to the point when the patient leaves the exam room. The project analyzed the predetermined efficient non-multidisciplinary clinics for best practices. In analyzing non-multidisciplinary clinics, the scope of this project included only the time the patient spends with the physician and nurse.

The team did not study tasks or activities associated with primary care including any general physicians who see patients for well-child visits or general sick visits. Any patient admission that occurs outside of the Taubman Pediatric Multispecialty Clinic was also not within the scope of this project.

The physicians listed in Table 1 below were the focus during the observation and interview segments of the project. These physicians are perceived by our clients to be efficient.

<table>
<thead>
<tr>
<th>Physician</th>
<th>Specialty</th>
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<tbody>
<tr>
<td>Physician 1</td>
<td>Nephrology</td>
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<td>Physician 2</td>
<td>Nephrology</td>
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<td>Physician 3</td>
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<td>Physician 11</td>
<td>Endocrinology</td>
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<tr>
<td>Physician 12</td>
<td>Endocrinology</td>
</tr>
</tbody>
</table>
Methodology

Through interviews, observations, data collection, and data analysis, the team gathered and analyzed information and developed recommendations that identify best practices across non-multidisciplinary clinics to decrease patient wait time and improve patient satisfaction. The primary individuals studied in this project include the clinic physicians and clinic support staff. Finally, the team conducted a literature review using academic databases and peer-reviewed publications for material relevant to clinical best practices.

Interviews

The team interviewed nine physicians who were identified by the project clients to be efficient during four weeks from September 27th to October 29th.

During interviews with physicians, members of the clinic staff for some physicians also provided the team with insight into techniques the physicians use to stay on schedule and keep patient satisfaction high. The team asked all of the interviewed physicians questions including, but not limited to, the physicians’ perception on what factors affect low patient wait time, how the physicians manage “no shows” and late patients, and what techniques physicians use to stay on schedule and work around unexpected circumstances. For a complete list of questions, see Appendix A.

Observations

The team observed physicians, who were identified by the project clients to be efficient, for a total of 44 hours over four weeks from September 27th to October 29th.

The team observed how the physicians conduct their clinic as well as how the physicians know when patients arrive, how the physicians know it is their turn to enter the room, and what the physicians do when they are not seeing patients. Observations were also made of the physician’s clinic staff to determine the staff’s role in assisting the physicians. In particular, focus was placed on how the clinic staff helps the physicians stay on schedule and how the clinic staff lets the physicians know when the patients are ready to be seen.

Time Studies

The team conducted 521 time studies, 285 of which were usable, over the course of two weeks from October 25th to November 5th with all of the physicians who had clinic during that period.

Time studies were completed to determine which physician techniques are most efficient and have the highest patient satisfaction. The time study, which was completed by the patients themselves, recorded the time patients are assigned to a treatment room and how long each member of the clinic staff and physician spent in the room. Additionally, the patients answered a few questions about their visit including whether it was typical of other visits and if the patient would come back again (see Appendix B for complete time study sheet).
Data Analysis

The first step of the data analysis was to conduct a statistical analysis using the time studies to identify which physician techniques are most efficient and result in the highest patient satisfaction. Then using the observations and interviews, the team identified the best practices of the physicians who use techniques found in the time studies to be the most efficient and result in the highest patient satisfaction.

Literature Review

The team conducted literature searches from October 11th to October 18th using academic databases and peer-reviewed publications for material relevant to clinical best practices. Additionally, the team searched for information regarding how to best measure physician performance. One article the team used was titled *Patient Satisfaction Not Best Measure of Performance*. The main point being made in the article was that “how fast patients are seen may distinguish more about a practice or doctor’s performance than…overall patient satisfaction.”

Findings and Conclusions

This section discusses the team’s qualitative findings from interviews and observations to determine the perceived efficient physician’s best practice methods, as well as quantitative findings and conclusions from the time studies to validate the perceived efficient physicians.

Interviews and Observations

Through interviews and observations, the team gathered information on general practices performed by the predetermined efficient physicians. A summary of general practice findings are highlighted below.

- Physicians perceive that return patients wait on average for 15 minutes before start of appointment and new patients wait on average for 30 minutes.
- All physicians see around the same number of patients: 10 patients per clinic.
- Some physicians have a set procedure for the sequence the clinic support staff enters the patient’s exam room to initiate the appointment, while others do not.
- Certain physicians ask patients the same questions previously asked by a nurse to attain more detailed information, while other physicians brief with the nurse before seeing patients to avoid repeating questions.
- Most physicians print out only required forms and notes for appointment, while a few print all relevant documentation to avoid looking up forms on the computer in exam room.
- There is a mix of physicians who schedule extra time in clinic schedules to allow for a period to read up on patient history and who do not.
- Some physicians have set cut-offs for attending to late patients, while others will see late patients based on the flow of the clinic that particular day.
- Certain physicians will enter a patient’s exam room multiple times, while other physicians will never enter a patient’s exam room more than once.
Time Studies

Through time studies, the team gathered information to validate the perceived efficient physicians. A summary of quantitative findings from time studies are highlighted below.

*Perceived efficient physicians were validated with time study*

Out of the 12 physicians identified as efficient, nine were observed for best practice methods. The time study data was evaluated for the average wait times for each of the nine physicians. The average was determined, and the perceived efficient physicians were compared to the mean. Five of the perceived physicians had times under the mean, two did not have enough time studies, and two did not have any time studies collected. There were a total of 61 physicians with time study data.

*For all physicians, one in four patients currently wait at least one hour before seeing a physician.*

To evaluate how long patients were waiting to see a physician, the team conducted a time study in which patients recorded the time assigned to a treatment room and how long each member of the clinic staff and physician spent in the room. The time studies showed that the average time a patient waited to see a physician was approximately 44 minutes with one out of every four patients waiting at least one hour before seeing a physician (see Figure 1).

![Figure 1. Patient’s wait time before seeing a physician](image)

*Sample size: 285 patients, Source: Time Study, Collection Period: October 25th – November 5th*
On average, patients seeing an efficient physician wait less time than those patients seeing an inefficient physician.

After looking at how long patients waited regardless of physician, the team decided to split up the physicians into two groups: the physicians identified by the client as efficient and the rest of the physicians. Patients who saw an efficient physician waited approximately 34 minutes before seeing a physician while patients who were seeing another physician waited approximately 45 minutes (see Figure 2).

Figure 2. Patient’s wait time before seeing a physician (efficient vs. other)

Sample size: 37 patients seeing an efficient physician, 248 patients seeing other physicians,
Source: Time Study, Collection Period: October 25th – November 5th

Clinic support staff spends the same amount of time with patients regardless of physician.

The total time spent in the clinic for patients seeing an efficient physician was approximately 50 minutes compared to 62 minutes for patients who saw another physician (see Figure 3). Since the difference between time until seeing a physician was 11 minutes and the difference in total time spent in the clinic was 12 minutes, the team concluded that the clinic support staff takes the same amount of time doing their job regardless of physician.
Finally, the team conducted a t-test to validate that the difference found between efficient and other physicians is statistically significant. Using a 99% confidence interval, the team calculated that the difference found between efficient and other physicians is statistically significant with a p-value of 0.006. A p-value of 0.006 means that there is a 0.6% chance that the data the team received is due to random variation. Therefore, there is a 99.4% chance that the difference found between efficient and other physicians is statistically significant.

Medical students do not affect the efficiency of a clinic

To evaluate the issue of how medical students affect the efficiency of a clinic, time study data was analyzed for the number of physicians who utilized a medical student within their clinic. It was found that out of the 24 physicians who had time study data, there were only three physicians that did not have any students within their clinic. This was based on physicians that had enough data points from the time study. Within the 24 physicians, only two out of the predetermined 12 efficient physicians did not have medical students within their clinic.

There is no correlation between patient wait time and patient satisfaction

The team made a scatterplot to see if there was a correlation for patient satisfaction (rated 1-5 with 5 being the highest) and wait time. Figure 4 shows that there is not a correlation between patient satisfaction and wait time. Patients were just as likely to be satisfied with their visit whether they waited 20 minutes or two hours before seeing a physician. Similarly, patients were also just as likely to be dissatisfied with their visit whether they waited 20 minutes or two hours. The team believes that there is a lack of correlation between patient satisfaction and wait time.

Figure 3. Total time patients spent at the clinic (efficient vs. other)
Sample size: 35 patients seeing an efficient physician, 228 patients seeing other physicians, Source: Time Study, Collection Period: October 25th – November 5th
because patients are not as worried about how long they wait compared to the quality of care they are getting. For example, in the time studies, many patients gave 5’s for their satisfaction score but also made comments such as “long wait, difficult with child” and “seems like forever before someone comes in.”

Figure 4. Patient satisfaction and wait time before seeing a physician

*Sample size: 285 patients, Source: Time Study, Collection Period: October 25th – November 5th*

**Recommendations**

To identify characteristics that were common to efficient physicians, the best practices of the physicians who were validated were gathered into three main categories: non-value added work, patient preparation, and clinic flow.

*Non-Value Added Work.* Physicians should perform certain tasks to make sure that clinic time was used effectively:
- Ensure immediate patient care by physician or nurse
- Stay aware of the amount of time spent with patients
- Be on time for clinic duty

*Patient Preparation.* To ensure the preparation of the patient’s appointment visit, efficient physicians should:
- Read the next patient's history
- Analyze notes from previous appointments
- Develop templates for returning patients
Clinic Flow. Efficient physicians should run their clinics ensuring that patients were not waiting long and were satisfied. In particular, these physicians should:

- Attend to late patients only based on the flow of clinic
- Work closely with medical assistants
- Avoid overbooking
- Ensure only one visit to patient exam room

Action Plan

All of the team’s recommendations are ideas that can be implemented immediately. However, it is probably not reasonable to ask the physicians to make all of the recommended changes at one time. Therefore, the team recommends implementing the ideas gradually. The team suggests the physicians should first focus on ensuring immediate patient care by provider or nurse and attending to late patients only based on the flow of the clinic to ensure the most efficient impact. Finally, the team proposes that our time study be conducted again in six months to determine the effectiveness of the team’s recommendations on wait time.

Expected Impact

Based on the results, the team provided recommendations that will improve the current patient flow and enhance the efficiency of the Taubman Pediatric Multispecialty Clinic. The recommendations provided by the team will result in:

- Decrease patient wait time by minimizing the time a patient spends waiting for a treatment room and waiting for the physician and support staff
- Increase patient throughput
- Maintain patient satisfaction by sustaining the quality and efficiency of patient care

Support Received from Operating Entities

The project clients, Kelly Hornbacher and Dr. James Lopez, provided ongoing details of the problem, requirements, expectations, needed data (such as – schedules, average number of patients per day, and patient satisfaction reports), and contact information. The clients acted as liaison between the team and other individuals to ensure full cooperation. For example, when the team needs to interview staff, the clients communicated those needs. Additionally, the team received cooperation from the physicians and clinic staff members to conduct observations and interviews.

The project coordinator, Jackie Lapinski, the team’s guide and mentor, helped to maintain analytical quality, provided input for project ideas and methods, and ensured a positive client relationship throughout this project. Also, the project coordinator gave the team feedback on the project progress and helped with the team’s professional skills.
Appendix A: Interview Questions

List of Interview Questions:

1) What do you think makes you a good and efficient practice?
2) What is a good day/bad day?
3) How is flow managed?
4) How are “no shows” and late patients handled?
5) Does the clinic stay on time? How does it “catch up” or deal with unexpected circumstances to stay on time?
6) Do effective clinics have low rates of “no shows”?
7) Is there duplication of work?
8) What is the allocation of responsibility for elements of patient care?
9) Where is work done by various team members?
10) Does the team stay on time?
11) What are the durations of the visits?
12) How long was the MD in the room?
13) Are there trainees in the clinic (fellow/residents/ medical students)?
   - How are trainees used in clinic?
14) Are there other providers in the clinic (other Attending or nurse practitioners)
15) What preparation is done prior to the clinic?
   - Do they review clinic list/ last letter prior to clinic?
   - Are educational handouts preprinted/easily accessible?
   - Do division’s pre-call patients re upcoming visits?
16) Is there a specific sequence of individuals who must go into a room prior to provider?
17) Are there different rates of no shows in different types of clinics?
Appendix B: Time Study Survey

Taubman Pediatric Clinic Survey Form

Please help us conduct this survey. We would like to understand the flow of this clinic to make your experience better.

New Patient  Yes  No

Doctor ________________________________

Check in time  ____:________

Time assigned to an exam room  ____:________

First person to enter at time  ____:________

□ Doctor  □ Psychologist  □ Nutritionist
□ Nurse  □ Other ____________

Second person to enter at time  ____:________

□ Doctor  □ Psychologist  □ Nutritionist
□ Nurse  □ Other ____________

Third person to enter at time  ____:________

□ Doctor  □ Psychologist  □ Nutritionist
□ Nurse  □ Other ____________

Time last person leaves  ____:________

Was this visit typical of normal visits?  1  2  3  4  5
worse  same  better

What was your overall satisfaction with your visit?  1  2  3  4  5
dissatisfied  neutral  satisfied

What is the possibility of attending this clinic again?  1  2  3  4  5
will not attend again  will attend again

N/A