TEXAS MEDICAL ASSOCIATION

Physicians Caring for Texans

TexMed 2017 Quality Improvement Abstract

Please complete all of the following sections and include supporting charts and graphs in this document. Submit a total of two documents - this document and the Biographical Data and Disclosure Form to posters@texmed.org by midnight March 17, 2017.

Procedure and Selection Criteria

- Applicants should demonstrate an understanding of QI concepts through the use of quality tools, measures of success and the use and interpretation of data. Judges will use the scoring described in this matrix to identify projects to be presented at the conference, as well as, projects to be considered for the awards.
- Maximum points are delineated with a brief explanation of the content that should be included under each section. Applicants must select one of the following improvement categories into which the project best fits: patient safety, patient centered care, timeliness, efficiency, effectiveness, or equity. Applicants may describe the problem and results in narrative or graphic format.

PROJECT NAME*:* Improving Clinic Flow at an Academic, Safety-net, Surgical Oncology Ambulatory Clinic

Institution or Practice Name: UT Southwestern Medical School

Setting of Care: Parkland Memorial Hospital Surgical Oncology Ambulatory Clinic

Primary Author: Matthew Tran

Secondary Author:

Other Members of Project Team: Patty Brown R.N.; Dr. Jennifer Rabaglia M.D., MSc, FACS

Is the Primary Author, Secondary Author or Member of Project Team a TMA member (required)?

☒ Yes ☐ No

Please provide name(s): Matthew Tran

Project Category: *(Choose all appropriate categories)*

☐ Patient Safety	☒ Patient Centered Care	☒ Timeliness
☒ Efficiency	☐ Effectiveness	☒ Equity

☐ **Enhanced Perioperative Recovery**

☐ **Disaster Medicine and Emergency Preparedness**

For this poster session, TMA is looking for projects that demonstrate the six aspects of Quality Care as defined by the Institute of Medicine.

- Safe - avoids injuries to patients from care that is intended to help them
- Timely - reduces waits and delays for both those who receive care and those who give care
- Effective - based on scientific knowledge, extended to all likely to benefit, while avoiding underuse and overuse
- Equitable - provides consistent quality, without regard to personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status
- Efficient - avoids waste, including waste of equipment, supplies, ideas, and energy

- Patient centered - respects and responds to individual patient preferences, needs, and values, ensuring that patient values guide all clinical decisions

Quality Improvement (QI)

Overview: *Describe 1) where the work was completed; 2) a description of the issue that includes how long the issue has been going on and the impact the issue has on the organization/facility; 3) what faculty/staff/patient groups were involved, and 4) the alignment to organizational goals.*

1) The surgical oncology ambulatory clinic was targeted as a pilot site for the application of lean methodology. The clinic is part of a larger healthcare setting that includes a safety net, academic hospital that annually had 65,585 patient discharges along with a total of 1,026,510 total ambulatory visits. Additionally, 27% of patients were uninsured in 2015. The surgical oncology ambulatory clinic is a teaching clinic that sees about 35 patients per day. The clinic runs on Mondays and Fridays in a shared space with other clinics. On Monday, the clinic is occupied only by the surgical oncology team. On Friday, the clinic space is split between the surgical oncology team and the palliative care team, limiting both space and resources that day. Given these factors, the interventions targeted Monday clinic first.
2) As healthcare burden continue to rise rapidly, the United States is moving toward payment systems that reward quality and lower costs, shifting from volume to value to improve sustainability. Long patient wait times in clinic can decrease patient access to care and patient experience. The surgical oncology clinic has inefficiencies causing excessive delays leading to high patient dwell times, which negatively affect patient and provider satisfaction. The 2016 Press Ganey survey reported a patient satisfaction score of 88.5 (n=26). This score is about two standard deviations below the benchmark of 93.3 (n=1,243). Between March 2016-March 2017, the mean dwell time in Monday clinic was 99.6 minutes (n=101) and 80.2 minutes (n=511) for new and follow-up patients, respectively. The purpose of this study is to use quality improvement tools to decrease these wait times.
3) The clinic staff includes about two attending physicians, one third-year resident, two interns, two to three medical students, one clinic manager, one nurse navigator, two licensed vocational nurses, one medical assistant, and one front desk worker. The surgical oncologists see a patient population with predominantly gastrointestinal cancers of the liver, stomach, pancreas, or bile duct with a varying ratio of new to follow-up patients each clinic day.
4) One of Parkland's strategic goals towards ambulatory care is to improve ambulatory clinic efficiency, patient access to care, and both patient and provider satisfaction. This project aligns with all three of these goals by analyzing clinic flow with the goal to utilize lean methodology to improve all three facets mentioned above by reducing dwell times.

Aim Statement (2 points for each portion of SMART, with max points 10): *Describe the goal of the project incorporating SMART.*

Specific – what faculty/staff/patient groups were involved and where the work was completed
Measureable – numerical values that define baseline and goal
Actionable – what solutions/interventions were implemented
Realistic - able to implement solutions and sustain outcomes with given constraints
Time bound – what date established to reach goal by

The aim of this project is to increase efficiency and decrease waste in Parkland's surgical oncology ambulatory clinic by decreasing dwell times, defined as the patient check-in to check-out time, by 10% by March 2017. The first intervention is to pre-assign patients to trainees (residents/medical students) before clinic starts. This aim is important because it improves ambulatory clinic efficiency, patient access to care, and both patient and provider satisfaction, while increasing the value ratio (value-added time in the system).

Measures of Success (5 points for describing solutions measurement and 5 points for describing outcome measurement, with max points 10): *Describe how you measured your interventions to ensure adherence and describe how you measured your outcome.*

In the "measure" phase, key measures were identified and a value stream map was created. The measures were: 1) patient dwell time data, defined as the time between check-in and check-out, which Epic

collated through the electronic medical record timestamps; and 2) patient satisfaction scores, which the Press Ganey survey collected. Baseline data was collected over one year before the intervention.

In the "control" phase, patient dwell time data and patient satisfaction scores were collected for as many observations as possible within a two-week period after the intervention had begun. Furthermore, two-sample independent student t-tests will be used to determine if there was a statistically significant difference in patient dwell times and patient satisfaction scores, once adequate data has been collected. The goal is to have at least 100 and 300 post-intervention data points for new and follow-up patients, respectively.

Use of Quality Tools (5 points for appropriate tools utilized during each PDSA phase, with max points 20): *What quality tools did you use to identify and monitor progress and solve the problem? Provide sample QI tools, such as fishbone diagram or process map, and identify which phase of the PDSA cycle each tool was utilized in. Note tools here and send as addendum with abstract form.*

Quality improvement methodology proposes the use of the DMAIC (define, measure, analyze, improve, control) process to guide the project on a macro level. At the micro level, the PDCA (plan-do-check-act) method was used to refine the processes and tasks continually. Starting with the "define" phase, a project charter was created with the project objective of decreasing patient dwell times to improve the value of healthcare delivery. This phase included creating a stakeholder registry and interviewing clinic staff to get a sense of the current state including clinical inefficiencies and to recruit their buy-in for the project.

In the "measure phase," key measures were identified (described above) and a value stream map was created. The study utilized time studies by following patients and staff through the process to document periods of waste and variability. Next, a value-stream map of the process of clinic flow was created with the assistance of clinic staff (addendum Figure 1). Patients, front desk staff, medical assistants, licensed vocational nurses, nurse navigator, clinic manager, trainees, and attending physicians gave input into all separate steps required for the patient visit in the ambulatory surgical oncology clinic. Visio software was used to create the value-stream map.

In the "analyze" phase, Pareto charts (addendum Figure 2) and fishbone diagram (addendum Figure 3) were created.

In the "improve" phase, the fishbone diagram was used to identify the causes that had the greatest impact on clinic efficiency. Then, in addition to the fishbone, using time studies, clinic observations, and informal clinic feedback, the team brainstormed interventions with a prioritization matrix (addendum Table 1) to determine the most viable solutions. Afterwards, discussion with the team and ambulatory clinic leadership narrowed our interventions to two.

In the "control" phase, patient dwell time data and patient satisfaction scores were collected for as many observations as possible within a two-week period after the intervention had begun via Epic. The data was presented at an aggregate level (addendum Table 2) and as run charts (addendum Figure 4 and 5).

Interventions (max points 15 includes points for innovation): *What was your overall improvement plan (include interventions and identify quick wins)? How did you implement the proposed change? Who was involved in implementing the change? How did you communicate the change to all key stakeholders? What was the timeline for the change? Describe any features you feel were especially innovative.*

Out of 32 interventions brainstormed, we decided on two that would provide the most impact after looking at the prioritization matrix. Two interventions were suggested: (1) Patients were pre-assigned to trainees before clinic start time to reduce the time they spent studying the patient chart before the patient visit; and (2) an organized supply cart was introduced to improve clinic flow for procedures. During the baseline data collection phase, the nurses implemented the quick win of creating organized supply trays for common procedures in the clinic. The first intervention of pre-assigning patients took more time (about two months) to start up because it required approval from both the ambulatory clinic leadership along with the attending physician. After a positive response, the attending physician communicated the intervention with the entire

clinical staff, allowing for feedback. The week prior to clinic start, the attending physician manually assigns new patients to trainees for review before the patient visit instead of during clinic time.

At first blush, pre-assigning patients does not seem to be a novel idea, yet to our knowledge, no such intervention has been studied in a high-volume, academic, safety-net, surgical oncology ambulatory setting. The intervention is of particular note since many ambulatory clinics in this particular health system rely on trainees to grab patient charts from a pool of patients as they are roomed, which leads to inefficiencies such as lack of patient order, inconsistent initiative, gaming of the system, and so on. For example, a trainee may wait until a particularly less complex patient shows up or may wait to grab a patient chart until no other trainee takes the newly roomed patient. A deceptively simple intervention of pre-assigninng patients to trianees has a considerable effect on dwell times.

Results (max points 25): *Include all results, using control charts, graphs or tables as appropriate. Charts and graphs must be appropriately labeled or points will be deducted. Note charts, graphs and tables here and send as addendum with abstract form.*

The 2016 Press Ganey survey reported a patient satisfaction score of 88.5 (n=26). This score is about two standard deviations below the benchmark of 93.3 (n=1,243). The mean dwell time in Monday clinic was 99.6 minutes (n=101) and 80.2 minutes (n=511) for new and follow-up patients, respectively. The post-intervention mean dwell time in Monday clinic was 86.2 minutes (n=11) and 70.6 minutes (n=24) for new and follow-up patients, or about a 14% and 10% reduction respectively (addendum Table 2). The dwell time data was also plotted on run charts (addendum Figure 4 and 5). Post-intervention patient satisfaction score is currently not available to be analyzed because of the lag-time to collect data.

Conclusions and Next Steps (max points 20): *Describe your conclusions drawn from this project and any recommendations for future work. How does this project align with organizational goals? Describe, as applicable, how you plan to move ahead with this project.*

In summary, as of the writing of this abstract form, the pilot intervention showed promise of meeting the prescribed goals of reducing dwell times at least for new patients in Monday clinic. Compared to the baseline, there was a 14% and 10% reduction in dwell times for new patients and follow-up patients, respectively. The run charts show a downward trend in dwell times at least for new patients. This study demonstrated the usefulness of Lean methodology in improving value and access in healthcare through reducing patient dwell times in high-volume, academic, safety-net, surgical oncology ambulatory clinic. From the literature review, this study is the first to examine the effect of pre-assigning patients to trainees in this setting. These findings have implications for hospital administers as this intervention can be directly scaled up to other ambulatory clinics, providing minimum input disruption and maximum value-add. Further, this healthcare system is earnestly examining ways to improve dwell times and patient satisfaction across the board, leading to improved patient access to care and patient experience. Future work on this project will need to concentrate on collecting additional data for statistical analysis and on refining the current intervention.

Primary author: Matthew Tran; Second-year medical student at UT Southwestern

Addendum (Figures and Tables with under DMAIC heading)

Measure Phase

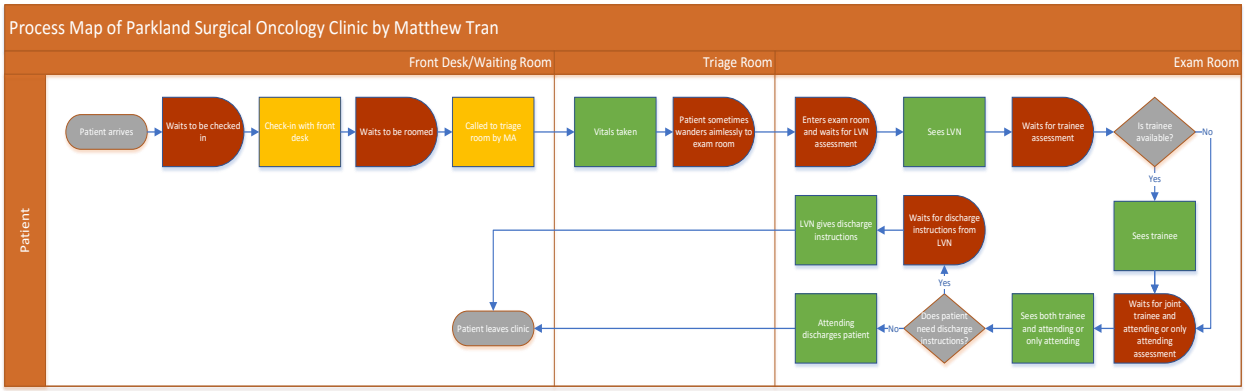

Figure 1. Value stream map. Legend: Red not value added, unambiguous. Green value added. Yellow value-enabling or mandatory. Gray decision point.

Analyze Phase

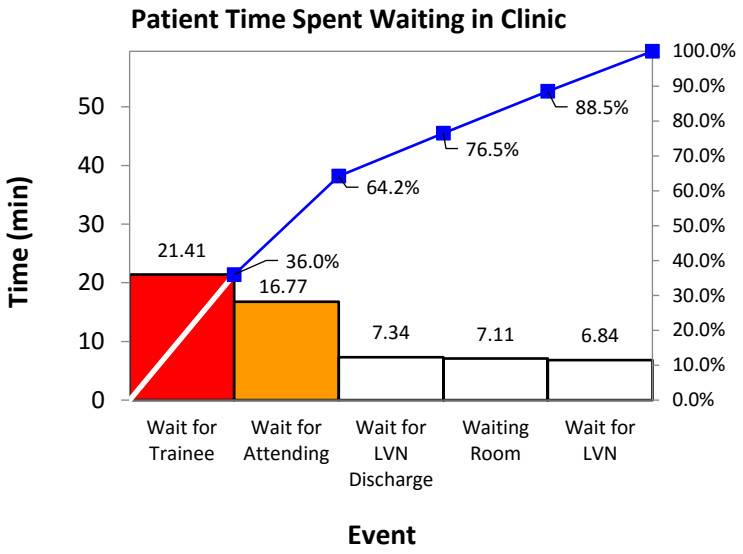

Figure 2. Pareto chart of top five non-value-add times in the surgical oncology clinic for 29 observations.

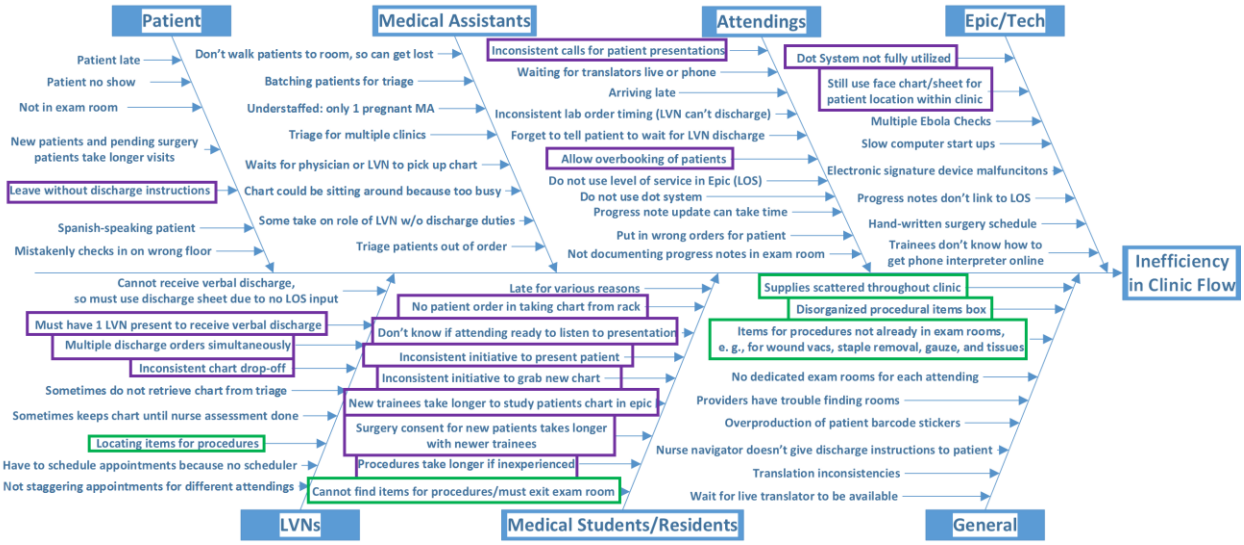

Figure 3. Root cause analysis via fishbone diagram. The figure represents causes identified in clinic that may lead to inefficiency in clinic flow. The root-causes are organized into seven larger branches, including the patient, medical assistants, attending physicians, licensed vocational nurses (LVN), trainees (medical students and residents), technology such as Epic system (electronic medical record), and general or other causes. The purple boxes highlight areas of opportunity that the first intervention—pre-assigning patients to trainees before clinic start—should impact, affecting the human decision-making element in the clinic. The green boxes highlight areas of opportunity that the second intervention—creating an organized supply cart should impact, affecting the organization of the clinic.

Improve Phase

Table 1. Prioritization matrix for suggested interventions. Highlighted interventions were implemented based on discussion with ambulatory clinic staff and leaders.

	Possible Interventions for Surgical Oncology Clinic	Evaluation Criteria (1-worst to best-5 scale)					
		Effect on reducing inefficiency and waste	Start-up Cost	Bureaucratic Feasibility	Time to Effect	Unweighted Total	Weighted Score
	Weighting	**50%**	**10%**	**30%**	**10%**	**-**	**100%**
1	**Stagger patient appointments for different attending physicians**	5	4	3	4	16	4.2
2	**Pre-assign patient charts to trainees for review prior to clinic start**	4	5	4	4	17	4.1
3	**Have dedicated exam rooms for each attending physician**	5	4	3	3	15	4.1
4	**If resident and attending see patient together, have resident put in lab orders/write note in exam room**	5	5	2	4	16	4
5	**Attending see patients alone if multiple patients are ready to be seen**	3	5	5	5	18	4
6	**Have 2 medical assistants working**	5	2	3	4	14	4
7	**Retire face sheet and used colored dot system**	5	3	3	3	14	4
8	**Put in lab orders in exam room or during pt. presentation**	5	5	2	4	16	4
9	**Trainees signal that they have a patient ready to present instead of waiting for attending physician to ask**	4	5	4	2	15	3.9
10	**Checklist for trainees on how to get phone interpretor online**	3	5	5	4	17	3.9
11	**Have procedure materials in exam room (or crash cart)**	4	3	4	4	15	3.9
12	**Consistently place chart in rack**	3	5	5	4	17	3.9
13	**Resident should see a patient while waiting to present**	3	5	5	4	17	3.9
14	**LVN split up duties 1 focusing on discharge and another focusing on NA**	3	5	5	4	17	3.9
15	**Trainee see patients before attending arrives into clinic**	4	5	3	4	16	3.8
16	**Have live interpretor ready at start of clilnic**	4	3	4	3	14	3.8
17	**Use LOS in the exam room**	4	5	3	4	16	3.8
18	**Give complicated cases to more experienced trainees**	4	4	3	3	14	3.6
19	**dot system to indicate readiness**	4	3	3	3	13	3.5
20	**Add scheduling template to prevent overbooking**	5	3	1	3	12	3.4
21	**Attending ensures patients are seen in order**	3	5	3	4	15	3.3
22	**After physician visit, have patients wait discharge waiting room for LVN discharge**	3	5	3	3	14	3.2
23	**Schedule new patients to earlier clinic appointmet slots**	3	4	3	3	13	3.1
24	**Construct sign outside provider room indicating which exams rooms are to the left and which are to the right**	3	2	3	5	13	3.1
25	**Have medical assistants walk patients to exam room**	1	5	5	5	16	3
26	**Have medical assistants clean exam room instead of LVN**	2	5	4	3	14	3
27	**Organize tray of materials for procedures**	2	4	4	4	14	3
28	**Hire scheduler for the clinic**	3	2	3	3	11	2.9
29	**Add comments columns to epic (real-time updates on patient)**	2	3	4	3	12	2.8
30	**Use level of service for discharge notes in Epic**	2	5	3	3	13	2.7
31	**Reduce patient barcode printing**	3	3	1	5	12	2.6

32	**Attending ensures medical students don't spend too much time studying pt.**	1	5	1	4	11	1.7

Control Phase

Table 2. Current state (baseline) and post-intervention state for mean dwell times in Monday clinic for new and follow-up patients. Current state (baseline) for patient satisfaction score in the surgical oncology clinic (includes Monday and Friday clinic) and patient satisfaction benchmark score for other publically-funded ambulatory clinics.

Clinic Metric	Baseline	Post-intervention
Mean Dwell Time for New Patients in Monday Clinic (minutes)	**99.6** (n=101)	**86.2** (n=11)
Mean Dwell Time for Follow-up Patients in Monday Clinic (minutes)	**80.2** (n=511)	**70.6** (n=24)
Patient Satisfaction Score for Surgical Oncology (2016)	**88.5** (n=26)	–
Patient Satisfaction Benchmark Score (2016)	**93.3** (n=1,243)	–

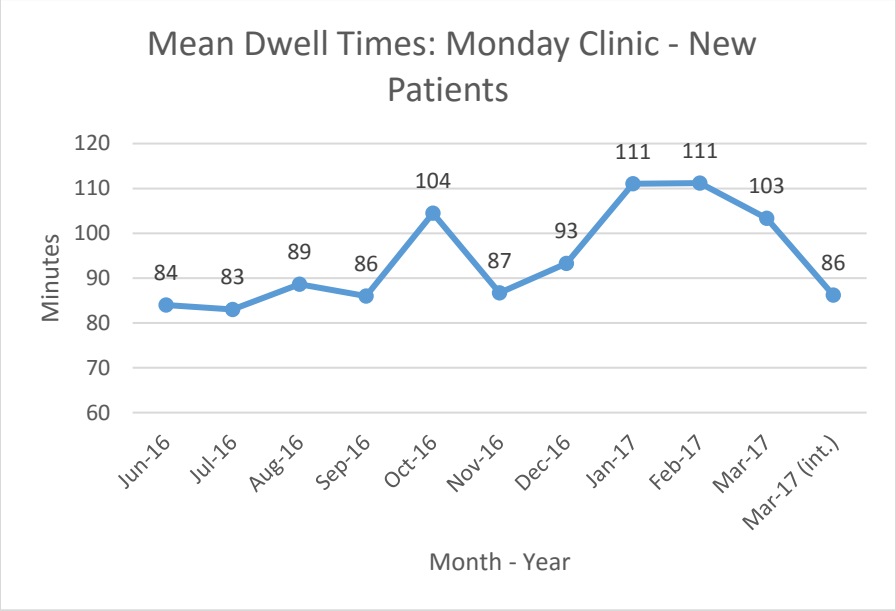

Figure 4. Run chart of monthly mean dwell times in Monday clinic for new patients with the intervention beginning in the middle of March 2017.

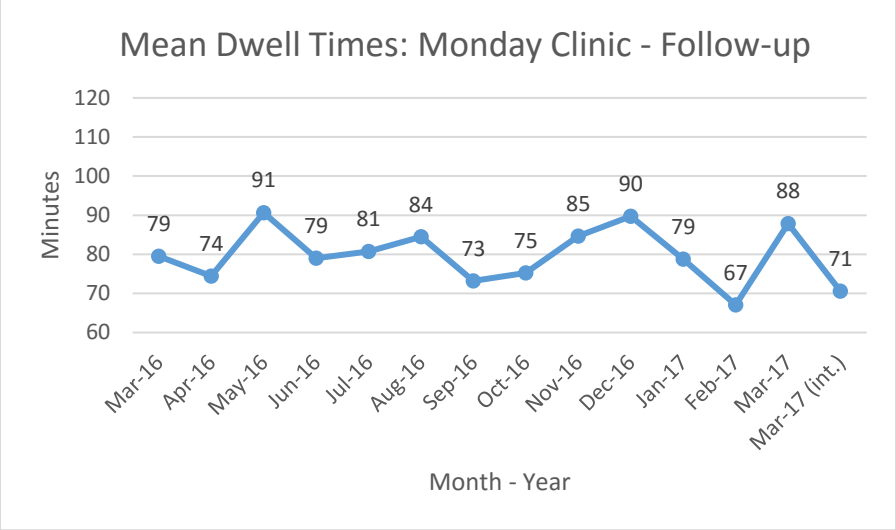

Figure 5. Run chart of monthly mean dwell times in Monday clinic for follow-up patients with the intervention starting in the middle of March 2017.