



Parkland Diabetes Clinic

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Quality Improvement Success Stories are published by the American Diabetes Association in collaboration with the American College of Physicians and the National Diabetes Education Program. This series is intended to highlight best practices and strategies from programs and clinics that have successfully improved the quality of care for people with diabetes or related conditions. Each article in the series is reviewed and follows a standard format developed by the editors of *Clinical Diabetes*. The following article describes an initiative to reduce the no-show rate for appointments at the Parkland Diabetes Clinic in Dallas, TX.

Describe your practice setting and location.

This project was conducted at the Parkland Diabetes Clinic in Dallas, TX, an endocrinology clinic that operates within the Parkland Health System, a safety-net health system that serves the indigent population of Dallas County. The clinic conducts ~1,200 visits per month, including new referrals, follow-up visits, social work services, teleretinal screenings, nursing services, mental health care, and diabetes education visits. The clinic has 16 providers, including several attending physicians (endocrinologists), several endocrinology fellows, physician associates, and nurse practitioners. The clinic is also supported by additional staff, including certified diabetes care and education specialists, a social worker, a clinical pharmacist, a part-time mental health counselor, and a part-time psychiatrist, as well as a nurses, medical assistants, and clerical staff.

The patient population served at the clinic is ethnically diverse (50% Hispanic/Latinos, 30% Black, and 15% non-Hispanic White) and predominantly underserved (50% receive charity care, and 10% have commercial insurance).

Describe the specific quality gap addressed through the initiative.

Our project focused on improving the rate at which patients missed scheduled appointments at the clinic (i.e., the no-show rate). Patients missing scheduled appointments is a pervasive issue across outpatient clinics in general. The no-show rate among primary care clinics is estimated to be between 14 and 50% (1). Additionally, these missed appointments are estimated to cost the U.S. health care system \$150 billion annually (2). At many clinics, high no-show rates have necessitated overbooking clinic slots to maintain efficiency (3). However, high no-show rates themselves and the overbooking that they necessitate create problems for both patients and providers. Patients who miss scheduled appointments are at risk for continued disease progression (4). Furthermore, overbooking creates longer wait times if all patients do attend their clinic visit on a given day. Longer waits in turn lead to patient frustration and dissatisfaction with care. Overbooking to compensate for a high no-show rate can also reduce patient access to care and lead to provider frustration and clinical inefficiency.

How did you identify this quality gap? In other words, where did you get your baseline data?

As noted above, the clinic offers many different types of services, and, with the advent of the coronavirus disease 2019 (COVID-19) pandemic, it also began conducting more telehealth visits. In this project, we focused on new patient visits, follow-up appointments, and telehealth visits seen by the clinic's 16 providers. It was

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hypothesized that the study intervention would have the most impact on no-show rates for these types of visits.

We identified the quality gap by analyzing data on scheduled patient visits with the clinic's providers. For each clinic day, the total number of missed appointments and the total number of total clinic visits were counted. The number of missed appointments was then compared with the number of total clinic visits; the no-show rate for each month in the studied time period was calculated by dividing the number of no-shows that month by the number of total clinic visits.

Summarize the initial data for your practice (before the improvement initiative).

For our initial data, we calculated the baseline no-show rate from June 2018 to May 2019 and also conducted a survey of patients who had missed appointments to determine what they felt were the biggest obstacles to coming to their appointment. The no-show rate (defined as total no-shows divided by total clinic visits) was $\sim 31.9 \pm 2.1\%$.

The baseline survey included questions about what no-show patients felt were the biggest obstacles to coming to their appointments and what measures they felt could be taken to help them come to their appointments. Questions included whether they had received adequate appointment reminders, if they knew when their appointment was scheduled, and whether factors such as transportation barriers or limited childcare options prevented them from attending.

Surveys were conducted by telephone. No-show patients were also asked about how they felt appointment reminders should be handled. The two most common responses were via text message and via a phone call from a real person. Live phone calls were preferred over automated calls.

The survey also listed common reasons from the literature for why patients miss scheduled appointments and asked how strongly patients felt these reasons applied to them (Supplementary Figure S1). The most common reasons patients identified with were "I have trouble remembering to go to clinic appointments" and "The timing of my appointment was not convenient." Reasons patients felt were not important or relevant to them included "The clinic is too far away from home,"

"The waiting time is too long in the clinic," and "Difficulty parking at the clinic (e.g., parking is too expensive)."

Limitations to our survey include some bias. Social desirability bias was clear, as many patients with high no-show rates were surveyed, yet 82% of respondents said they "almost always" or "always" attended their appointments. Recency bias may also have affected our responses, as patients may have overrated recent reasons for not attending a scheduled appointment compared with most distant reasons. Another limitation was that, although our survey was able to reach ~ 30 patients, obtaining responses from more patients could have increased the power of the findings. Our survey results did have a high degree of overlap with those of larger surveys found in the literature, however. For example, forgetting appointments and lack of transportation (two of the top three responses in our survey) were frequently the most common responses in other surveys (4).

What was the time frame from initiation of your quality improvement (QI) initiative to its completion?

The project began in the summer of 2019, when the quality gap was identified and project objectives were created. This effort included process-mapping of the clinic's appointment scheduling to identify inefficiencies (Supplementary Figure S2) and calculation of the baseline no-show rate. Our aim was to reduce the rate of clinic follow-up appointment no-shows by 50% by 1 January 2022. We chose this goal based on the available literature concerning average no-show rates in clinics across the country. As mentioned previously, the no-show rate among primary care clinics is estimated to be between 14 and 50% (1). We wanted to set our goal at the lower end of this rate, and because our baseline no-show rate was at $\sim 31.9\%$, getting to the low end of the estimated general rate would equate to a reduction of $\sim 50\%$.

Patient surveys were conducted in the summer of 2020. Based on the survey findings and the process map, an intervention and implementation plan was constructed. Interventions were implemented in August 2020. A subsequent 12-month period from November 2020 to October 2021 was used to assess the impact of the interventions. No-show rates were calculated for this 12-month period.

Describe your core QI team. Who served as project leader, and why was this person selected? Who else served on the team?

The project leader was a UT Southwestern medical student completing his QI distinction project. He received training on how to conduct QI research as part of this project. He worked closely with two endocrinologists at the clinic and additional clinical staff, including nursing, clinic leadership, and clerical staff. The project was also supported by the UT Southwestern Quality Improvement Department, including faculty and staff.

Describe the structural changes you made to your practice through this initiative.

The structural change that was made as part of this project was to limit the degree to which the Patient Access Center, an external Parkland calling center, scheduled patients at the diabetes clinic. This intervention was chosen based on the difference identified when analyzing the no-show rates for the diabetes clinic (~32.4%) versus the Parkland Foot Wound Clinic (~18.9%) and comparing their differing scheduling processes. These two clinics operate in the same location with many of the same staff and patients, but the no-show rates were significantly different. This difference could be for several different reasons, including that patients view foot wound care as more pressing and therefore will attend more often. By analyzing the scheduling process, however, we found that all appointments for the foot wound clinic were scheduled by the clinic clerical staff (the same clerical staff shared by the diabetes clinic), whereas appointments for the diabetes clinic were scheduled by the Patient Access Center. This difference in the method of scheduling appointments may have been one of the factors behind the significantly different no-show rates, as the Patient Access Center was perhaps not as efficient in its scheduling. We chose this as a point of intervention, and in August 2020, we pilot-tested an intervention through which the clinic's clerical staff handled all of the scheduling for the diabetes clinic.

Describe the most important changes you made to your process of care delivery.

The process change we instituted was that patients now receive a telephone call reminder for their appointments. When analyzing the scheduling process at the diabetes clinic, we discovered discrepancies in how reminder phone calls were completed. On busy days, staff may not have had time to complete reminder phone

calls for upcoming patient appointments. Literature has shown that reminder telephone calls are helpful in reducing no-show rates (4) and that reminder calls made by a live person are more effective than automated calls (5). In fact, in our patient survey, 25% of respondents reported that they preferred live-person phone calls compared with 18% of respondents who said they preferred automated calls.

The COVID-19 crisis brought a unique opportunity to pilot-test an intervention in this area. Clinic staff began conducting phone calls as a screening tool for COVID-19 symptoms before patient appointments. These calls took place 1 day before appointments and simultaneously served as appointment reminders for patients. By having these calls already in place for COVID-19 considerations, we were able to pilot-test live-person call reminders as one of our interventions.

If you used the Plan, Do, Study, Act (PDSA) change model, provide details for one example.

Plan

The Plan phase consists of identifying opportunities for change, including describing the current situation or problem, gathering data to further define the problem, and having the team agree on an aim statement that delineates what the project is trying to achieve. The last part of the plan phase is choosing an intervention that is thought to best achieve the stated goals.

We ensured that all patients with an appointment at the diabetes clinic received a live reminder phone call before the appointment. We also had the clinic clerical staff schedule all patient appointments rather than the Patient Access Center, Parkland's external call center.

Do

The Do phase involves implementing the selected interventions. We implemented our interventions for 14 months, from August 2020 to October 2021.

Study

The Study phase is for collecting post-intervention data. These data are compared with baseline data and are usually displayed as a control/run chart. After 14 months, we analyzed the no-show rate. We compared the post-intervention no-show rate to our baseline rate and summarized the data in a control chart (Supplementary Figure S3).

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Act

The Act phase involves adopting changes for the long term if they turned out to be successful or abandoning the changes and repeating the cycle to find more successful alternatives. We will modify our interventions to maximize long-term sustainability. In addition, we will perform a cost-benefit analysis regarding the use of clinic staff to make reminder phone calls and schedule patients.

Summarize your final outcome data (at the end of the improvement initiative) and how they compared with your baseline data.

Our two interventions were implemented in August 2020. During the study period, there were no significant changes made to the interventions.

Our primary outcome measure for determining the impact of our interventions was the patient no-show rate. Our no-show rate significantly decreased from baseline (Supplementary Figure S3). The average no-show rate during the post-intervention period was $\sim 22.2 \pm 2.50\%$, a significant decrease from the baseline rate of $\sim 31.9 \pm 2.19\%$ (t test, $P < 0.05$). We predict this reduction will result in more consistent follow-up care, less risk of disease progression, and increased clinical efficiency.

Potential Effects of the COVID-19 Pandemic on This Study

The COVID-19 pandemic may have contributed to a lower no-show rate because many visits were switched to a telehealth format during the crisis. In the literature, some clinics have demonstrated that virtual visits during the pandemic have had lower no-show rates compared with pre-pandemic no-show rates for in-person visits. The reasons for these findings include the elimination of transportation/distance barriers. For example, one study found that “primary care and adult nonsurgical specialties demonstrated significant reductions in no-shows with 2020 televisits as compared with 2019 clinic visits” (12.4 vs. 11.2%, $P < 0.001$, and 12.9 vs. 10.5%, $P < 0.001$, respectively) (6). This trend was also seen in dermatology clinics in a study done at the University of Massachusetts (6). These observed reductions may certainly apply to the Parkland Diabetes Clinic as well.

Our analysis did indeed show a lower no-show rate for virtual visits compared with follow-up and new-patient visits, so COVID-19 measures could have been a confounding factor in our post-intervention no-show rate. However, even when telehealth visits were excluded

from the analysis, our post-intervention no-show rate still significantly declined from pre-pandemic levels, although to a slightly lesser degree. Specifically, the no-show rate not including virtual visits was $\sim 23.4 \pm 3.27\%$ compared with the no-show rate including virtual visits of $\sim 22.2 \pm 2.50\%$. As a reminder, the baseline no-show rate was $\sim 31.9 \pm 2.19\%$. In addition, as seen in Supplementary Figure S4, our post-intervention no-show rate remained relatively constant despite the wide differences in how many virtual visits were conducted in the diabetes clinic. This finding further suggests that the post-intervention no-show rate was primarily driven by our interventions rather than by the confounding effect of virtual visits. If the effect of virtual visits had been driving our post-intervention no-show rate, one would expect to see a significantly lower no-show rate in months with a high percentage of virtual visits; however, this was not the case.

The COVID-19 pandemic also may have increased the no-show rate across many clinics. One study examined no-show rates at an outpatient imaging clinic in New York. The authors found a significant increase in the no-show rate during the initial phase of the pandemic starting in March 2020. Interestingly, they also found that the no-show rate recovered to baseline (defined as the corresponding month in 2019) within 3 months, suggesting that the no-show rate was differentially affected during different phases of the pandemic (7).

What are your next steps?

The next steps in this project will include implementing our interventions for the long term in a sustainable manner. Before we do this, however, the costs of the intervention (i.e., increased responsibility and time commitment from the clinic staff) will need to be weighed against the benefits. Although a number of clinical benefits are associated with lowering the no-show rate, there also are opportunity costs of doing so. The time staff spends conducting reminder phone calls is one example. In addition, it is likely that dealing with a large volume of reminder phone calls on a daily basis may affect staff retention rates. These costs will ultimately need to be weighed against the benefits of our interventions.

What lessons did you learn through your QI process that you would like to share with others?

Our project demonstrates that, by following QI methodology and the PDSA cycle, clinics can target root causes for system inefficiencies with site-specific interventions.

With support from leadership and buy-in from staff, these interventions can positively affect the main problem being studied (in our case, the high no-show rate at the Parkland Diabetes Clinic). Although our specific interventions may not apply to every clinical context, the methods we used in this study can be reproduced to target high no-show rates at other outpatient centers.

DUALITY OF INTEREST

No potential conflicts of interest relevant to this article were reported.

AUTHOR CONTRIBUTIONS

F.J. analyzed data, reviewed the relevant literature, conducted the patient survey, created a process map, and wrote the manuscript. U.G. provided data, reviewed and edited the manuscript, and provided guidance and support in involving key team members and implementing the interventions. F.J. is the guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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