



Improving Planning for Transition to Adult Care in a Pediatric 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 efforts at a large midwestern pediatric health system to improve planning for patients' transition from pediatric to adult diabetes care settings.

Describe your practice setting and location.

Children's Mercy Kansas City (CMKC) is a comprehensive nonprofit pediatric health system based in Kansas City, MO. Uniquely situated at the state border of Missouri and Kansas, CMKC provides care to a geographically, socioeconomic, and ethnically diverse population of patients and families from across the Midwest.

The Children's Mercy Diabetes Center is a member of the T1D Exchange Quality Improvement Collaborative

(1) and serves ~2,600 children, youth, and young adults through the age of 21 years with diabetes. It has four primary clinic locations: two in the Kansas City metropolitan area and the others located in central Kansas, including one in Topeka, the Kansas state capital, and one in Wichita, the largest city in the state. Additionally, there are four satellite locations in the Kansas City metropolitan area and three tele-facilitated outreach practices in rural locations across Kansas and Missouri, including Joplin, MO, Junction City, KS, and Great Bend, KS. The Great Bend outreach clinic is staffed by Wichita clinicians, whereas the satellite and other outreach clinics are staffed by clinicians from Kansas City. All clinicians can also provide telehealth services to patients at home, as needed. The Topeka, Wichita, and Great Bend clinics were not included in the interventions and analysis discussed here.

The pediatric endocrinology practice consists of 30 pediatric endocrinologists, five advanced practice registered nurses, and medical trainees (i.e., pediatric endocrine fellows, pediatric residents, and medical students). The multidisciplinary team also includes 20 diabetes nurse educators, five diabetes dietitian educators, four social workers, and ~100 endocrine nurses and support staff, including research assistants, quality improvement (QI) specialists, and data scientists/data analysts.

Describe the specific quality gap addressed through the initiative.

Diabetes is a chronic condition requiring complex care. The most recent data from the T1D Exchange (2) showed that A1C has increased over time, predominantly in adolescents and young adults. These youth are expected to take on more responsibilities in all areas of their lives, which may take precedence over diabetes self-management and result in suboptimal glycemic control, increased rates of complications, and thus increased hospitalizations and other health care costs (3). Therefore, it is important for pediatric diabetes clinics

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to provide support and prepare youth for success when they transfer to adult care. This period is so critical that the American Diabetes Association (ADA) recommends that pediatric diabetes providers begin to prepare youth for transition to adult health care in early adolescence and, at the latest, a minimum of 1 year before they are transferred to an adult care setting (4).

This project was developed to improve transition readiness and prepare youth with diabetes for optimal transfer of care to an adult setting by improving transition planning. Our specific goal was to improve transition planning documentation to 50% of eligible patients in our diabetes clinic by 30 June 2022.

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

Before starting this project, our institution created a transition readiness assessment (TRA) to facilitate discussions between patients and clinicians to plan for transition to adult care. The same TRA is used throughout the hospital by all clinics and is not specific to diabetes care. The TRA is a questionnaire completed by eligible patients annually and includes general transition readiness questions such as knowledge about one's conditions and medications and skills for self-management and self-advocacy. The purpose of the TRA is to help clinicians identify areas in which patients need guidance to prepare for self-management and transitioning to an adult provider. The link to the TRA is automatically sent to patients/families by e-mail or text message 3 days before scheduled appointments if it has not been completed for the past year. Immediately upon completion, results are available for clinicians to view in the electronic medical record (EMR) system in real time. This process was implemented in the diabetes clinic in January 2021. After patient visits, clinicians document transition planning discussions and any goals identified by patients to prepare for the transition. Our institution has a transition program that provides monthly reports of patient TRA and clinician documentation of the transition plan.

In accordance with ADA recommendations for beginning transition planning at least 1 year before transfer, we tracked transition planning in youth ≥ 17 years of age (1 year before they could be seen by an adult endocrinologist or in an adult clinic). Although we recognized that transition planning can begin sooner, we chose to track those who should have had clinician-documented transition plans based on ADA guidelines.

A root cause analysis (Supplementary Figure S1) was performed via anonymous clinician and diabetes

educator surveys to identify barriers to transition planning in our diabetes clinic. The most commonly identified barrier was a lack of awareness of the individual steps for the completion of the transition planning process (Supplementary Figure S2). This lack of awareness included not recognizing eligible patients with whom they needed to assess transition readiness, not knowing where to find the results of patients' TRAs, and a lack of awareness of how to document transition planning discussions in the EMR system.

Documentation of the transition plan by clinicians allowed us to track whether transition planning was discussed with eligible patients. Although the TRA is the same for all departments, each department is required to complete clinician documentation forms to ensure that separate plans can be implemented if multiple specialties are involved in the same patients' care. Our initial interventions sought to improve clinician awareness of and engagement in each of the steps in the transition planning process.

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

Our pediatric diabetes clinic follows $\sim 2,600$ unique individuals with diabetes of various etiology; about 15% (~ 400 patients) are ≥ 17 years of age and constitute the group of patients who should have documented diabetes transition plans. Before this QI initiative, clinician documentation of transition planning was performed for only $\sim 20\%$ of eligible patients with diabetes.

What was the time frame from initiation of your QI initiative to its completion?

This was an 8-month QI project beginning 1 November 2021 and ending 30 June 2022.

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

This project was conducted as part of a QI education course administered by CMKC and attended by three pediatric endocrinology fellows. The course is specifically designed for trainees to systematically investigate an opportunity for improvement, and specifically to learn and apply QI tools and methods for problem-solving. Three coaches with extensive QI experience were assigned to this project. Seven 60-minute coaching sessions were conducted over the course of 7 months (October 2021 to April 2022), and each session focused on real-time application of QI tools and processes, including determining

the problem, setting the goal, identifying the root cause (creating a fishbone diagram), developing interventions for improvement, and checking outcomes (creating a run chart). During each session, at least one of the assigned coaches was present.

Our diabetes center has multiple workgroups focused on different aspects of diabetes care. One of these is the diabetes transition work group, co-led by a pediatric endocrinologist physician and a diabetes nurse educator. Other members include two other diabetes nurse educators, a social worker, a QI manager, and a QI assistant. We were also supported by the CMKC transition program, which included a QI specialist.

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

A weekly report of upcoming diabetes appointments with patients ≥ 17 years of age was provided by our institution's transition program. The report identified for each patient the appointment location, date, and time and the clinician, as well as the date of the last documented diabetes transition planning discussion. This information allowed us to quickly identify eligible patients. Those who fit the age criteria but had a documented diabetes transition plan within the past year were ineligible for the scope of this project.

Use of this report to improve transition planning was new to this project and was implemented with the initial intervention to assist the team in recognizing patients needing a diabetes transition plan. Reminder notifications stating that patients were "eligible for transition planning discussion" were manually placed each week by a member of the diabetes transition workgroup on the notes of the ambulatory organizer for each eligible patient's diabetes clinic EMR encounter (cycle 1). CMKC uses the Cerner Millennium EMR platform.

A PowerPoint presentation was created to educate clinicians and staff on the importance of transition planning, the steps in the transition planning process used by our institution, interventions being implemented for this QI initiative, and the process for documenting transition planning discussions in the EMR system. This presentation was delivered regularly at department meetings, with updates during the course of this QI initiative. The presentation was also sent via e-mail to the entire department because not all staff members were always able to attend department meetings.

The EMR system uses a documentation standard called "dynamic documentation," through which clinicians select a documentation template by entering a smart phrase. The template allows various discrete data to be documented in the clinic note and is used by all clinicians for all diabetes encounters. Based on feedback obtained after cycle 1, transition planning was added to the assessment and plan section of the diabetes smart-phrase documentation template as a reminder to document the discussion (cycle 2). Clinicians enter the template as part of clinic visit documentation and complete the fields, one of which is for transition planning. Transition planning selection options include "Transition planning done today," "Not done: deferred to next visit," or "Not done: <17 years old." The addition of transition planning to the template was intended to also serve as a reminder for clinicians to complete separate transition planning forms in the EMR system with details of these discussions. This form allows us to track the occurrence of these transition planning discussions.

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

The root cause analysis identified a lack of patient engagement (i.e., patients not mentally prepared to discuss transition readiness, equating it with transfer of care) as a barrier to discussing transition planning. We hypothesized that improving the patient TRA rate (Supplementary Figure S3) would increase the number of clinician transition planning discussions and subsequent documentation because of structured goal-setting and skills assessments available through the TRA. Two interventions were planned specifically to improve the TRA response rate and ran concurrent to the QI Plan-Do-Study-Act (PDSA) cycles. Intervention 1 was to educate the check-in staff on how to check for completion of the TRA and how to resend it when not complete. Intervention 2 was a pre-visit phone call to discuss the value of the TRA and encourage its completion.

The link to a patient assessment is sent automatically via the EMR system to eligible patients/families by e-mail or text message 3 days before scheduled appointments if an assessment has not been completed in the past year. The responses are visible in the EMR system in real time for clinicians to review and compare with previous assessments. Staff checking in patients for appointments were trained to recognize the absence of a patient TRA from the past year and to ask these patients to complete the questionnaire while waiting for their clinician appointment to begin. A workflow diagram

displaying the steps to resend the survey link was created for use by staff communicating with youth either at the time of the visit or by phone before the visit. Improving this response rate continues to be an important part of transition planning discussions.

A pre-clinic huddle (cycle 3) was established between clinicians and diabetes educators at the start of a diabetes clinic to identify and review any patients eligible for transition planning and increase the rate of transition planning discussions and subsequent documentation. One clinician works with one diabetes educator (1:1) in a diabetes clinic. We did not specifically track the occurrence of this intervention in the scope of this project.

If you used the PDSA change model, provide details for one example in the sections below.

- **Plan.** A reminder notification was placed on each eligible patient's diabetes clinic encounter.
- **Do.** We did this for 1 month (November 2021).
- **Study.** After 1 month, there was no significant increase in transition planning documentation.
- **Act.** We collected feedback from clinicians, who reported that transition planning was often discussed but not documented in the EMR system. Therefore, we added transition planning to the smart-text documentation template for the diabetes assessment and plan section as a reminder to document these discussions.

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

We encountered unexpected barriers during this QI initiative. Diabetes clinics were converted to telehealth visits because of a surge of coronavirus disease 2019 infections between January and March 2022. The intervention to improve the patient TRA response (intervention 1) and the pre-clinic huddles (cycle 3) were suspended until in-person clinics resumed. The patient TRA response decreased during this telehealth period (Supplementary Figure S3). Additionally, frequent technological issues were a major barrier during telehealth visits and limited the total visit time and the ability of clinicians to discuss transition planning.

When intervention 1 was resumed with the addition of intervention 2 (Supplementary Figure S3), the TRA response rate increased. However, this higher response rate did not result in a significant increase in documented transition plan. Throughout this QI initiative, the percentage of eligible patients with a documented

transition plan increased from a baseline of 20% to an average of 48% but fell short of the 50% goal (Supplementary Figure S3).

What are your next steps?

We plan to expand this project to clinic locations in Wichita, Great Bend, and Topeka. We also plan to develop transition-related education resources based on the TRA that will be easily available to patients in clinics, on our public website, and on a clinical care application specific to our clinic. Our goal is to further increase patients' and clinicians' engagement by using the TRA to thoughtfully tailor transition planning support for each patient.

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

We learned that both patients' and clinicians' engagement are crucial to transition planning. Because we are a large pediatric endocrinology practice, implementing a new clinical standard was challenging. Interventions that were trialed and successful on a small scale did not sustain their momentum across the practice. Other limitations that would require more systematic and structural changes included insufficient time during visits to discuss transition planning and other urgent diabetes concerns that took precedence.

Another important lesson learned from this QI initiative pertained to the practice of obtaining feedback from clinicians regarding the implemented interventions. Many reported that they often forgot to document transition planning discussions. Based on this feedback, we added transition planning to the assessment and plan documentation template. This intervention led to a significant increase in transition planning documentation.

In a large practice such as ours, which has multiple clinic locations, it is also important to note that different interventions that may need to be implemented depending on staffing availability and other clinic-specific factors, such as what we did to increase the patient TRA completion rate. In the future, we may also need to identify more individual clinicians' barriers to discussing transition and determine individual interventions to improve engagement and sustainability.

Finally, we learned that participating in a QI initiative firsthand through the duration of a QI course is a great opportunity for trainees to learn in a systematic way

how to improve a process and how to master QI methodology. QI initiatives should be considered a standard in clinical practice as a means to improve patient health outcomes.

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DUALITY OF INTEREST

M.C. has received consulting fees from Glooko and research support from Abbott Diabetes Care and Dexcom. No other potential conflicts of interest relevant to this article were reported.

AUTHOR CONTRIBUTIONS

E.W., E.Z., and L.B. were pediatric endocrinology fellows who initiated this project as part of a QI course and contributed to the planning and execution of the initiative. E.W. also contributed to the data analysis and drafted the initial manuscript. J.C., E.D., H.F., and M.C. provided ideas and perspectives in the conceptualization of the project. J.C. was the diabetes nurse educator leading the diabetes transition workgroup. S.R. was the physician leading the diabetes transition workgroup, conceptualized the project, assisted with planning and execution, and served as faculty mentor. All authors reviewed and approved the final manuscript. S.R. 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.

PRIOR PRESENTATION

Partial results of this QI initiative were presented in abstract form as an oral presentation during the University of Missouri Kansas City School of Medicine's 9th Annual Vijay Babu Rayudu Quality and Patient Safety Day, Kansas City, MO, 6 May 2022.

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