



Screening for Mental Health Comorbidities in a Pediatric Diabetes Clinic Setting

Alissa J. Roberts,^{1,2} Dwight Barry,² Joyce Yi-Frazier,² Lori Rutman,^{1,2} Catherine Pihoker,^{1,2} and Faisal Saleem Malik^{1,2}

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 effort to improve mental health screening of patients at a pediatric diabetes clinic in Seattle, WA.

Describe your practice setting and location.

Seattle Children's Hospital is a tertiary care, free-standing pediatric hospital in the U.S. Pacific Northwest that serves the largest geographic region of any children's hospital in the country. The pediatric diabetes program is staffed by 16 pediatric endocrinologists, 6 advanced practice providers, and medical trainees (i.e., endocrine fellows, pediatric residents, and medical students). The multidisciplinary team also includes 22 nurses (13 of whom are certified diabetes educators), 4 diabetes social workers, and 6 dietitians. All diabetes social workers on the team have master's-level training

and are qualified to carry out psychosocial assessments, including the evaluation of patients' mental health, social status, and functional capacity within the community. In addition, all have completed required continuing education specific to suicide assessment to maintain their Washington state license and are aware of mental health resources available in the region at the community level.

The program follows >2,200 youth and young adults (up to the age of 21 years) with diabetes. The campus of Seattle Children's Hospital includes regional clinics located throughout the state of Washington. This quality improvement (QI) project was carried out at the main campus diabetes clinic located in Seattle, WA.

Describe the specific quality gap addressed through the initiative.

Depression and diabetes distress are common in adolescents and young adults with diabetes (1,2), and both are associated with poor glycemic and psychosocial outcomes (3,4). To facilitate improved identification of these psychosocial comorbidities, validated screening tools have been developed for assessment of each in the clinical setting (5,6).

Given the high prevalence of mental health comorbidities among people with diabetes, the American Diabetes Association recommends routine psychosocial screening in the outpatient setting (7). In a recent publication examining clinical practices across the United States, <45% of pediatric diabetes clinics screened patients with type 1 diabetes for mental health concerns using validated screening tools (8). Thus, there is a need to improve the quality of outpatient pediatric diabetes psychosocial screening. This QI initiative focused on improving screening for depression and diabetes distress for patients aged 13–21 years with diabetes in the outpatient setting.

¹Department of Pediatrics, University of Washington School of Medicine, Seattle, WA; ²Seattle Children's Research Institute, Seattle, WA

Corresponding author: Alissa Roberts, alissa.roberts@seattlechildrens.org

This article contains supplementary material online at <https://doi.org/10.2337/figshare.12494000>.

This series is published by the American Diabetes Association in collaboration with the American College of Physicians, Inc., and the National Diabetes Education Program. The American College of Physicians and the American College of Physicians logos are trademarks or registered trademarks of the American College of Physicians, Inc., in the United States and shall not be used otherwise by any third party without the prior express written consent of the American College of Physicians, Inc. Likewise, products and materials that are not developed by or in partnership with the National Diabetes Education Program are prohibited from using the National Diabetes Education Program logo.

<https://doi.org/10.2337/cd20-0037>

©2020 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. More information is available at <https://www.diabetesjournals.org/content/license>.

See accompanying article, p. 102.

QUALITY IMPROVEMENT SUCCESS STORY

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

Before this QI initiative, youth with diabetes were only screened for mental health comorbidities during their annual social work visit, if indicated by the social worker. No standardized criteria or processes were in place to determine which youth with diabetes would receive mental health screening within the context of a social work visit. Recognizing that not all youth with diabetes seen in the clinic were having an annual social work assessment, the core QI team carried out a medical chart review to explore social work utilization, as well as documented evidence of mental health screening using validated screening tools.

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

The audit of social work utilization revealed that fewer than one in five patients with diabetes (ages 13–21 years) were having annual social work visits, and of those who were seeing a social worker, ~10% had documented health screenings performed. Thus, only 2% of the clinic's patients with diabetes were receiving mental health screening in the year before this initiative.

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

This was a 16-month improvement initiative that began on 1 March 2018 and ended on 30 June 2019.

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

A junior faculty pediatric endocrinologist served as the project leader because of her role as a diabetes care provider, knowledge of diabetes, and familiarity with both the multidisciplinary team members and the clinic workflow. While implementing this project, she was selected to participate in a hospital-wide QI Scholars Program to support her QI initiative. As a QI Scholar, she completed coursework related to QI methodology and received additional mentorship on designing, implementing, and evaluating QI projects.

The team also included the division chief of Pediatric Endocrinology, the ambulatory care manager, the social work clinical manager, a research health psychologist, and a pediatric endocrinologist with QI research experience. Project champions from the social work and medical

assistant groups were also identified to obtain input and support QI initiative participation and to assist with implementation and protocol changes.

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

The major structural change made to our practice was the integration of electronic versions of validated mental health screening tools into our existing electronic patient intake process before a clinic visit. The team used the nine-item Patient Health Questionnaire (PHQ-9) to assess depressive symptoms and the Problem Areas in Diabetes Teen (PAID-T) Version to assess diabetes distress (5,6).

The PHQ-9 was selected for depression screening because of its high sensitivity and specificity in adolescents for detecting major depression when using a cutoff score of ≥ 11 (6). In contrast to the two-item version of the PHQ, the PHQ-9 also assesses for self-harm, which our team felt was important to evaluate given the high prevalence of suicidal ideation in adolescents with type 1 diabetes (9). The PAID-T was chosen to evaluate diabetes distress because of its demonstrated validity in this population and its shorter length compared with other screening tools for diabetes distress (5).

Before the full rollout of mental health screening in the outpatient setting, all division team members participated in an in-service training session on the importance of mental health screening, how to assess suicidality risk, and how to document crisis planning. The in-service session was carried out by an expert in mental health evaluations.

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

During the electronic clinic intake process, the medical assistants (MAs) worked to ensure that patients aged 13–21 years completed both the PHQ-9 and the PAID-T surveys with their standard intake assessment. A report with screening results was generated after a patient completed the surveys and sent to both the MAs and the patient's provider for electronic review. In addition, the report was printed by the MAs and included with other clinical intake paperwork for the provider to review before entering the patient's room for the visit. If the patient endorsed severe depressive symptoms or diabetes distress, the provider would explore mental health needs, with the help of a social worker when available, and facilitate connection with mental health care providers in the community.

Because the PHQ-9 includes a question exploring suicide risk, a protocol was developed to ensure an immediate mental health evaluation if a patient endorsed self-harm concerns. To facilitate timely evaluation of the highest-risk patients and ensure the positive self-harm screens were not overlooked, the electronic tool automatically sent an e-mail alert of a positive screen to the MA team, the provider seeing the patient, and the social work team. In addition, a member of the diabetes social work team also carried a “PHQ-9 pager,” which would alert if a patient endorsed self-harm. Recognizing that some electronic notifications may not be viewed in a timely manner, MAs were required to notify the provider verbally of the positive endorsement of self-harm to ensure that a safety assessment was completed before the patient left the clinic.

The suicidal risk assessments were carried out by the on-call diabetes social worker or the provider, if a social work team member was not available. This assessment included a safety assessment and crisis prevention planning and was used to determine whether the patient could be safely discharged home or whether an immediate evaluation in the emergency department was necessary.

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

- **Plan.** We initiated diabetes outpatient clinic mental health screening with the goal of increasing the rate of annual screening of youth with diabetes (aged 13–21 years) seen at our main campus diabetes clinic to at least 75%.
- **Do.** We did this for 9 months (a 3-month pilot period and a 6-month rollout of screening efforts).
- **Study.** After 9 months, we assessed our screening rate. Although the screening rate had improved, we found that it was not >75%.
- **Act.** We made two changes that we felt would affect key drivers of change. First, we modified our protocol to screen eligible patients at every diabetes clinic visit (ideally every 3 months) rather than once per year. In addition to facilitating increased opportunities to screen patients, we felt this was an important change given that the degree of depression and diabetes distress a patient experiences can vary over time. Because screening was no longer determined by the last date a patient was assessed for depression or diabetes distress, this change also helped to simplify the screening protocol for MAs and providers. Second, we expanded social work

availability to mirror provider clinic schedules. This step ensured that the diabetes care team had sufficient bandwidth to address any self-report of suicidality.

Over the course of this QI initiative, the project leader met with project champions on a monthly basis and met twice monthly with her QI Scholars mentor after being selected for the QI Scholars program midway through the project. The core QI team met quarterly to formally evaluate the screening process and identify areas for improvement. Updates to the protocol were communicated via e-mail to the entire division. Additionally, presentations were made periodically at staff meetings at which all division team members were present (e.g., providers, social workers, MAs, nutritionists, nurses, trainees, and administrators) to discuss the screening process and screening rate and review difficult cases. After implementation, this QI project was presented at Grand Rounds, a venue attended by members of all hospital divisions, to more broadly share the findings, results, and lessons learned from this initiative.

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

During the pilot phase of the effort, screening rates for 13- to 21-year-old patients with diabetes at our main campus clinic increased from 2% at baseline to 12%. Nine months after widespread rollout of the QI initiative to all providers, the screening rate had increased to 43% but still fell far short of the 75% goal. Further changes to the protocol were implemented after using the “PDSA” cycle described above, and, by the end of the project, mental health screenings had increased to 80% of all eligible patients. Statistical process control methods were used to determine whether there were statistically discernable shifts in our monthly screening rates over time, and these are presented as a run chart (Supplementary Figure S1).

Over the 16-month period, 480 unique individuals were screened. Of those patients, 18% endorsed significant depressive symptoms (PHQ-9 score ≥ 11), with 11% of patients reporting concern for self-harm and 22% endorsing elevated diabetes distress (PAID-T score ≥ 44). These results are similar to what has been found in studies of adolescents with diabetes (9). Fortunately, there were no suicides of screened adolescents during the study period. The average A1C for this population did not change over the study period.

QUALITY IMPROVEMENT SUCCESS STORY

What are your next steps?

We now hope to roll out mental health screening at our regional diabetes clinics. Also, given the high rates of depression and diabetes distress identified in the population we serve, we hope to develop and assess interventions to target these comorbidities.

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

Stakeholder engagement and clinical leadership support was crucial to the success of this QI initiative given the multidisciplinary nature of the large team involved in both administering mental health screening and addressing psychosocial comorbidities identified in the outpatient setting.

We found that implementing a mental health QI initiative can present unique challenges. For example, this was a high-risk area of work in that a positive screen for self-harm could not be missed or overlooked. When developing our response algorithm, we had to ensure appropriate and timely responses to positive screens without overburdening our limited mental health resources. This goal was accomplished by creating a model for an on-call social worker for our diabetes clinics and creating a process to have PHQ-9 results delivered automatically via e-mail upon completion to all providers involved in the patient's care in clinic that day.

Although there was consistent social work availability for assessments related to self-harm, the availability of a social worker was available to assist the provider in exploring depression and diabetes distress. We believe this affected the degree to which a provider was able to explore a patient's mental health needs for those who screened at high-risk and facilitate connection with mental health care providers in the community, if indicated. Our team is currently engaged in a separate QI initiative to improve the coordination of multidisciplinary visits for youth with diabetes in our clinics.

We also learned the importance of using a balanced set of measures for all improvement efforts. In this QI initiative, we did not collect balancing measures such as impact on visit time or provider and patient burden, which would have facilitated an assessment of whether improvement in mental health screening was negatively affecting patient satisfaction, for example. For our regional diabetes clinic mental health screening implementation, we plan to include balancing measures

to identify, measure, and monitor unintended consequences of our QI efforts.

ACKNOWLEDGMENT

F.S.M.'s time was supported in part by a K23 Career Development Award from the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health (DK119465).

FUNDING

This QI project and A.J.R.'s time were supported by the Seattle Children's Hospital and University of Washington Department of Pediatrics QI Scholars Program.

DUALITY OF INTEREST

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

AUTHOR CONTRIBUTIONS

A.J.R. conceptualized and designed the study, supervised ongoing QI efforts related to this project, coordinated and supervised data collection, and drafted the initial manuscript. D.B. contributed to data acquisition and analysis plan and interpretation. J.Y.-F. and C.P. conceptualized and designed the study. L.R. and F.S.M. conceptualized and designed the study, contributed to ongoing discussions of this QI project, and contributed to data interpretation. All authors reviewed, revised, and approved the final manuscript. A.J.R. is the guarantor of this work and, as such, had full access to all of the data and takes responsibility for the integrity of data and the accuracy of the report.

REFERENCES

1. Silverstein J, Cheng P, Ruedy KJ, et al.; Pediatric Diabetes Consortium. Depressive symptoms in youth with type 1 or type 2 diabetes: results of the Pediatric Diabetes Consortium Screening Assessment of Depression in Diabetes study. *Diabetes Care* 2015; 38:2341–2343
2. Powers MA, Richter SA, Ackard DM, Craft C. Diabetes distress among persons with type 1 diabetes. *Diabetes Educ* 2017;43: 105–113
3. Hagger V, Hendrieckx C, Cameron F, Pouwer F, Skinner TC, Speight J. Diabetes distress is more strongly associated with HbA1c than depressive symptoms in adolescents with type 1 diabetes: results from Diabetes MILES Youth-Australia. *Pediatr Diabetes* 2018;19:840–847
4. McGrady ME, Hood KK. Depressive symptoms in adolescents with type 1 diabetes: associations with longitudinal outcomes. *Diabetes Res Clin Pract* 2010;88:e35–e37
5. Shapiro JB, Vesco AT, Weil LEG, Evans MA, Hood KK, Weissberg-Benchell J. Psychometric properties of the Problem Areas in Diabetes: Teen and Parent of Teen Versions. *J Pediatr Psychol* 2018;43:561–571
6. Richardson LP, McCauley E, Grossman DC, et al. Evaluation of the Patient Health Questionnaire-9 Item for detecting major depression among adolescents. *Pediatrics* 2010;126: 1117–1123

7. Young-Hyman D, de Groot M, Hill-Briggs F, Gonzalez JS, Hood K, Peyrot M. Psychosocial care for people with diabetes: a position statement of the American Diabetes Association. *Diabetes Care* 2016;39:2126–2140
8. Guttman-Bauman I, Thornton P, Adhikari S, et al. Pediatric endocrine society survey of diabetes practices in the United States: what is the current state? *Pediatr Diabetes* 2018;19: 859–865
9. Matlock KA, Yayah Jones NH, Corathers SD, Kichler JC. Clinical and psychosocial factors associated with suicidal ideation in adolescents with type 1 diabetes. *J Adolesc Health* 2017;61:471–477