



Transitioning to Telehealth Services in a Pediatric Diabetes Clinic During COVID-19: An Interdisciplinary Quality Improvement Initiative

Kaitlyn E. Brodar^{1,2} · Natalie Hong^{1,3} · Melissa Liddle^{1,4} · Lisandra Hernandez¹ · Judy Waks¹ · Janine Sanchez¹ · Alan Delamater¹ · Eileen Davis¹

Accepted: 5 October 2021

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2021

Abstract

COVID-19 necessitated a rapid shift to telehealth for psychologists offering consultation-liaison services in pediatric medical settings. However, little is known about how psychologists providing these services adapted to using telehealth service delivery formats. This report details how our interdisciplinary team identified declining psychosocial screener completion and psychology consultation rates as primary challenges following a shift to telehealth within a pediatric diabetes clinic. We utilized the Plan-Do-Study-Act (PDSA) quality improvement framework to improve screening and consultation rates, which initially declined during the telehealth transition. Screening and consultation rates dropped initially, but recovered to nearly pre-pandemic levels following three PDSA intervention cycles. During implementation, challenges arose related to the feasibility of patient interactions, interdisciplinary collaboration, patient engagement, and ethical issues. Clinics shifting psychology consultation-liaison services to telehealth should prioritize interdisciplinary communication, elicit perspectives from all clinic professionals, leverage the electronic health record, and develop procedures for warm handoffs and navigating ethical issues.

Keywords Telehealth · COVID-19 · Pediatric diabetes · Integrated care · Psychology · Interdisciplinary

Introduction

The COVID-19 pandemic necessitated a sudden shift to telehealth for many pediatric psychologists delivering consultation-liaison services in medical settings. By April 2020, 84% of psychologists in consultation-liaison roles identified telehealth as their primary modality for seeing patients (Steinberg et al., 2020). Although the transition to telehealth presented several challenges, it also offered opportunities for increasing access and convenience of care and is likely to

continue even after the pandemic ends (Kumar et al., 2020; Perrin et al., 2020). However, how psychologists in consultation-liaison roles have adapted to these new service delivery models remains relatively unreported.

Past research indicates that psychological interventions delivered via telehealth in outpatient mental health settings can effectively treat common problems, including depression and anxiety, and that mental health providers typically express favorable views of telehealth (Connolly et al., 2020; Grist et al., 2019). Although existing guidelines for conducting outpatient mental health services via telehealth are useful (e.g., Martin et al., 2020; McCord et al., 2020), guidelines specific to providing psychology consultation-liaison services in medical settings via telehealth are not currently available. Psychologists in these settings occupy unique roles and typically see patients on an as-needed basis immediately following the medical portion of the patient encounter (Carter et al., 2020). As such, transitioning services to telehealth is more complicated than in general outpatient mental health. For example, consultation-liaison psychologists are typically unable to schedule patients in advance and are generally introduced to patients via a warm handoff from

✉ Kaitlyn E. Brodar
kbrodar@miami.edu

¹ Mailman Center for Child Development, University of Miami Miller School of Medicine, Miami, FL, USA

² Department of Psychology, University of Miami, Coral Gables, FL, USA

³ Department of Psychology, Florida International University, Miami, FL, USA

⁴ Division of Behavioral Medicine and Clinical Psychology, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

a medical team member. Additionally, they may conduct activities like routine mental health screening that do not easily translate to telehealth, particularly in clinics that do not have the capability to incorporate screening within the electronic health record (EHR) and are thus dependent on providing screening measures on iPads or paper to patients in waiting rooms (Cifuentes et al., 2015). Likewise, while some work describing how inpatient psychiatry services adapted to telehealth during the COVID-19 pandemic (Kalin et al., 2020), these services are different than the activities conducted by consultation-liaison psychologists in outpatient medical settings.

Preliminary research evaluating the adaptation of pediatric consultation-liaison psychology services at the beginning of the COVID-19 pandemic highlighted several reported benefits of the telehealth service modality, including reduced risk of infection for both patients and providers, more flexibility, better continuity of care, and increased efficiency during visits (Steinberg et al., 2020). For example, psychologists were able to schedule appointments in advance rather than spending time finding patients in the clinic. Moving to telehealth also presented several challenges, including more difficulty establishing rapport and engaging families in care, fewer non-verbal cues during patient interactions, and reduced interdisciplinary communication and collaboration. Although early findings in this area are useful for informing the development of efficient and effective telehealth services (e.g., Barney et al., 2020), additional work focused on the initial transition and continued delivery of psychology consultation-liaison services via telehealth in pediatric outpatient medical settings is critical.

This report details how an interdisciplinary team employed multiple cycles of the Plan-Do-Study-Act (PDSA) quality improvement (QI) framework to improve psychological service utilization in an outpatient pediatric diabetes clinic during the transition to telehealth services at the start of the COVID-19 pandemic. Authors include two psychologists (AD & ED), three psychology trainees (KB, NH, & ML), two diabetes educators (LH & JW), and one endocrinologist (JS), who worked collaboratively within an endocrinology clinic in a South Florida academic medical center serving a diverse patient population (65.2% White, 19.9% Black, 14.9% Other race; 58.5% Hispanic/Latinx, 41.5% Non-Hispanic/Latinx).

On average, in the several months prior to the World Health Organization declaring COVID-19 a pandemic (i.e., December 2019 through early March 2020), 60% of eligible patients within our clinic completed a psychosocial screener and 25% participated in a psychology consultation (see Fig. 1). On March 17th, 2020, all in-person services were suspended due to safety concerns, requiring all team members to shift to providing services exclusively via telehealth. This shift was followed by an immediate decrease

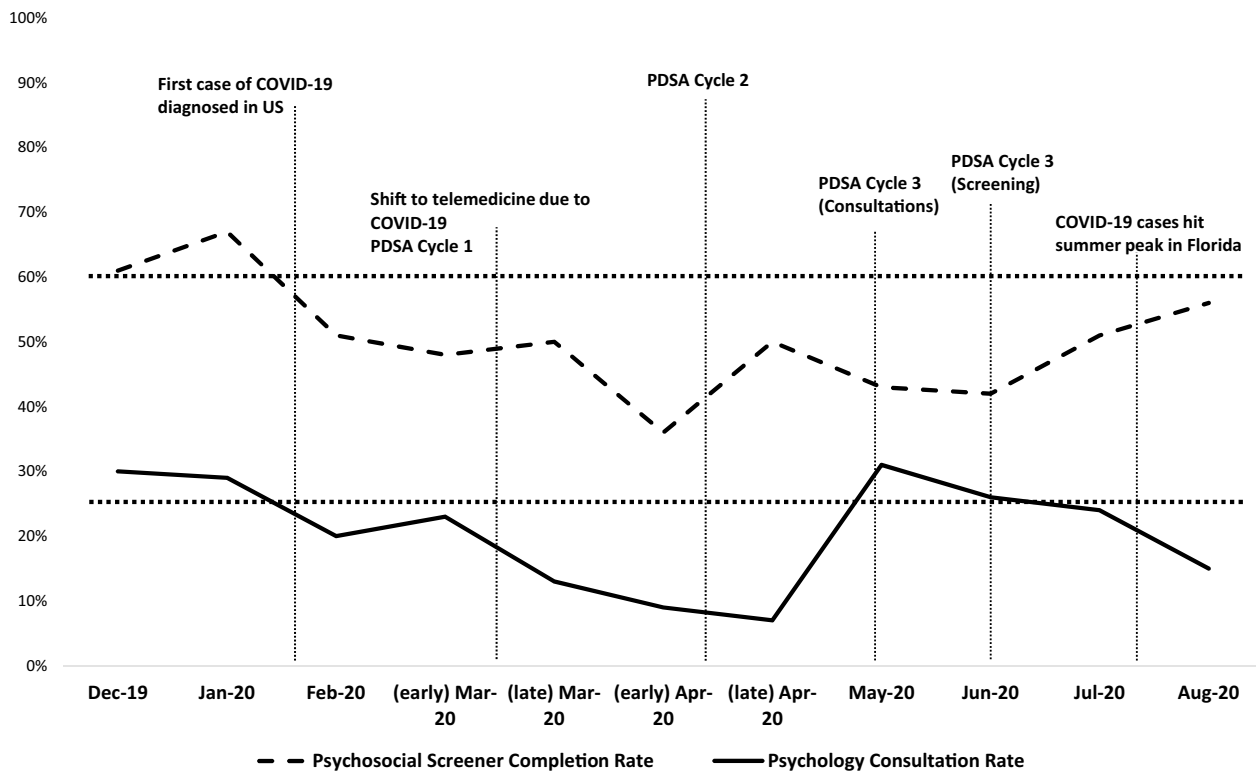
in both screener completion rates (down to 36%) and consultation rates (down to 9%). We aimed to restore psychosocial screening and psychology consultation rates to pre-pandemic levels within 3 months. Our clinic's psychosocial screening procedures and psychology consultations play an important role in identifying youth in need of additional support (Brodar et al., 2021). As such, it was critical to address the declining screening and consultation rates, particularly given the increase in mental health concerns in youth related to the pandemic, especially among youth with chronic illnesses (Hawke et al., 2020). Herein, we describe various interventions we employed to meet these goals and report on their effectiveness. Additionally, we note challenges encountered, solutions identified, and recommendations for future practice.

Methods

Context and Pre-pandemic Procedures

In May 2018, our clinic adopted routine psychosocial screening procedures. This change corresponded to a 24.9% increase in psychology consultation rates within the clinic over the following 10 months, with consultations specifically for mental health concerns (versus diabetes management or health behavior-related issues) increasing by 71.9% (see Brodar et al., 2021, for details). The screening protocol included measures of life satisfaction, depression and suicide risk, anxiety, eating disorders, and diabetes-specific measures of self-management behaviors, family conflict, stress, and intrinsic motivation. Adolescents (ages ≥ 12 years) completed the screener on iPads via Qualtrics—a secure survey platform—annually or more often, if indicated, prior to meeting with their endocrinologist. Qualtrics scored the measures automatically, and the psychology team shared results with medical providers orally in-person during clinic and later via summary tables emailed at the end of the clinic day for documentation purposes. Individuals with elevated scores received same-day consultation with a psychology team member who conducted additional assessment, offered brief interventions, and provided appropriate referrals at the end of the medical visit. The psychology team also provided consultations to families of younger youth or those without elevated scores, as needed. Endocrinologists and/or diabetes educators introduced the psychology team to patients and their families, offering a bridge that presented psychology as a routine part of care.

Clinic team members shared a huddle room, which facilitated interdisciplinary collaboration and consultation requests. Medical providers documented their portion of the patient encounter in our institution's electronic health record (EHR)—Epic—accessible to all clinic team members.



Note: The dotted line at 60% indicates the screening target rate, while the dotted line at 25% indicates the consultation target rate.

Fig. 1 Run chart of primary PDSA interventions and corresponding changes in screening and consultation rates over time

However, due to a lack of infrastructure and development at the time, medical providers were precluded from viewing psychology notes within the EHR. Thus, the psychology team documented their portion of the patient encounter in a separate, secure, cloud-based storage system—Box—accessible to all clinic team members. Given the predominant reliance on in-person contact for consistent interdisciplinary collaboration and coordination of care, the suspension of all in-person services highlighted the importance of optimizing communication among team members to continue delivering services effectively.

Approximately 1 week after the start of the COVID-19 pandemic (mid-March 2020), all patient encounters shifted to telemedicine. After approximately 3 months, the clinic began seeing some patients in person who were unable to do telemedicine visits. These patients were offered the option to come in person to the clinic to use an iPad to complete their virtual visit (see Table 2). However, more than 90% of visits continued to be completed via telehealth until June 2021. The overall number of patient visits to the clinic was approximately the same during the pandemic as it had been prior to the pandemic. Some patients came in only to download clinical information from their devices (e.g., continuous

glucose monitor) and to be assessed for vitals and HbA1c values. The clinic's diabetes educators contacted patients on the day before their appointment to address any concerns about completing the telehealth visit. Any patient who did not show up for their appointment was contacted repeatedly until they were able to have an appointment.

PDSA Approach

The PDSA approach was our selected continuous improvement method, as it has been shown to be highly effective at improving clinical process outcomes (Hill et al., 2020). This pragmatic approach (Speroff & O'Connor, 2004; Taylor et al., 2014) facilitated the use of complex and multi-faceted interventions that were responsive to the rapidly changing needs of our clinic and patients during the transition to telehealth services necessitated by the COVID-19 pandemic. Our interdisciplinary team identified two problematic areas—(a) psychosocial screening rates and (b) psychology consultation rates—which both decreased substantially during the initial transition to telehealth service delivery. We employed three PDSA cycles to address these issues (Table 1). Table 2 provides a summary of the challenges

Table 1 PDSA cycles to improve the rate of psychology screening and consultation in a pediatric endocrinology clinic

| Improvement target | Cycle | Plan | Do | Study | Act |
|--------------------|-------|--|---|---|---|
| Screening | 1 | Provide patients with remote access to psychosocial screeners in order to improve completion rates | Psychology sends <i>personalized</i> Qual-tries links to caregivers via email the morning of the patient's appointment (links expire at 5 pm) | Rates decline in early April (36%) | Caregivers may be unaware of emails containing links to psychosocial screeners. Intervention must target caregiver and endocrinology team awareness |
| | 2 | Supplement Cycle 1 plan; increase caregiver and endocrinology team awareness of access to and utility of psychosocial screeners in order to improve completion rates | Cycle 1 procedures continue. Psychology provides a list of patients being screened to endocrinology team at the start of each day. Psychology calls caregivers to confirm receipt of emails and to request youth complete screener prior to their appointment (requires approx. 10 min of psychology team's time/day). Endocrinology team provides additional reminder during the patient encounter | Rates improve (50% in late April), but remain insufficient (43% by May) | Caregivers may still be unaware of emails containing links to psychosocial screeners (e.g., if they do not answer psychology's calls and/or endocrinology forgets to provide reminder) or may be delayed in reviewing them, at which point links are expired. Intervention must target caregiver and endocrinology awareness, as well as continued access |
| | 3 | Supplement Cycle 2 plan; provide more time for responses in order to improve completion rates | Cycle 2 procedures continue. Psychology replaces <i>personalized</i> links with <i>generic</i> links and sends via email <i>several days prior</i> to the patient's appointment (<i>items assessing suicidality are removed; links do not expire</i>) | Rates increase steadily (56% by August) and near target (60%) | Screening rates improved, though slightly below target. Future efforts may do well to incorporate screener within EHR |

Table 1 (continued)

| Improvement target | Cycle | Plan | Do | Study | Act |
|--------------------|-------|--|---|---|--|
| Consultation | 1 | Provide patients with remote access to psychology consultation in order to improve consultation rates | Psychology contacts caregivers who are referred by endocrinologists to offer consultation via phone or telehealth (videoconferencing requires additional consent form) | Rates decline (13% by late March; 9% by early April) | Few patients are being identified for consultation due to low screening completion and physician referral rates; families may be unaware of continued availability of psychology services. Intervention must target communication with families and interdisciplinary team |
| | 2 | Supplement Cycle 1 plan; communicate availability of psychology services directly to all families receiving services from the clinic and elicit feedback from endocrinology team in order to improve consultation rates | Cycle 1 procedures continue. Psychology distributes mental health resources, information about how to request a psychology consultation, and telehealth consent form to families via clinic listserv. Psychology begins to develop a needs assessment to assess endocrinology team members' perspectives | Rates remain low (7% in late April) | Limited time to evaluate impact provided due to institution introducing telehealth integration within EHR. Endocrinology team reports willingness to complete needs assessment and welcomes psychology to join telehealth encounters. Intervention must continue to target communication with families and interdisciplinary team |
| | 3 | Utilize EHR to provide remote access to psychology consultation and integrate psychology team with endocrinology team encounters, as well as leverage results of needs assessment in order to improve consultation rates | University-wide EHR update facilitating telehealth appointments (Zoom integrated in Epic; additional consent form no longer needed as patients consented upon signing into Epic). Virtual "warm handoff" process implemented in which endocrinologist alerts psychology to join virtual encounter at end of medical portion, reviews medical visit, then logs off. Psychology then proceeds with their portion of visit | Rates increase substantially (31% in May) and remain near target (26% in June, 24% in July). Rates drop again (15% in August) | System-wide change integrating telehealth within EHR and responsiveness to needs assessment improved access to psychological services. Endocrinology team reports valuing psychology services and interest in continued interdisciplinary collaboration and coordination of care. However, psychology trainee transition and COVID-19 surge impact rates |

Note: For cycles 1 and 2, interventions related to screening and consultations were implemented simultaneously. For Cycle 3, interventions for consultations were implemented in May 2020 and interventions for screening were implemented in June 2020

Table 2 Challenges and solutions

| Challenges | Responses |
|---|---|
| Feasibility of patient interactions related to psychological screening and consultation | |
| New process required for remote administration of psychosocial screening (previously completed on clinic iPads prior to the medical appointment) | Links distributed to caregivers via email (leveraged PDSA cycles to improve process) |
| Lack of established model for consultation-liaison via telehealth <ul style="list-style-type: none"> • Psychology integrated in the clinic on consultation-liaison basis, highly dependent on in-person interactions and conversations with medical providers for consultation referrals • Medical providers initially had less time/energy to collaborate on developing model for psychology consultation as they also had to adapt to new modality for patient visits | Renewed interdisciplinary collaboration once process for medical visits was established Formed psychology consultation-liaison workgroup to partner with psychologists in other pediatric clinics within hospital system to share resources and ideas |
| Initial process for connecting families with psychology required multiple, disconnected steps as consults were completed via phone or through Zoom outside of EHR <ul style="list-style-type: none"> • Required separate consent form and created additional burden for psychology team and patients' caregivers | Leveraged PDSA cycles to improve process <ul style="list-style-type: none"> • Introduction of telehealth integration within EHR particularly helpful |
| Increased workload for all interdisciplinary team members (e.g., more time required for navigating technical difficulties, contacting and following up with families, coordination of remote documentation) | Continued exposure and practice utilizing the telehealth platforms led to increased comfort and familiarity over time Institution created patient-facing guides to improve the navigation to telehealth encounters Zoom integrated in Epic removed need for additional consent forms |
| Interdisciplinary collaboration | |
| Lack of shared physical space substantially reduced opportunities for communication and revealed numerous barriers to interdisciplinary communication and coordination of care | Psychology became increasingly proactive <ul style="list-style-type: none"> • Reviewed chart notes from all interdisciplinary team members and examined prior psychosocial screening data for potential consults • Emailed medical providers at start of clinic day with names of patients who may benefit from consult Initiated informal needs assessment in June 2020, which supported renewed interdisciplinary collaboration |
| Uncertainty navigating the identification and coordination of care <ul style="list-style-type: none"> • Medical providers were not initially provided with full list of youth to be screened or seen for consults each day and were initially uncertain how or with whom to initiate contact with psychology team • Diabetes educators and endocrinology fellow felt less informed about psychology's procedures than physicians, wanted to be included in communication about patients | Psychology presented findings from needs assessment and procedural updates during interdisciplinary team meeting Psychology began emailing physicians and nurse educators a list of patients to be screened prior to the start of each clinic day |
| Limited review of psychology documentation by medical providers due to separate platforms <ul style="list-style-type: none"> • Accessing separate system added to medical providers' workload • Written documentation to facilitate interdisciplinary communication about patient concerns and progress became integral once no longer sharing space | In needs assessment, medical providers indicated they would be more likely to review notes if integrated in the EHR Psychology began documenting directly in the EHR and routing notes to physicians |
| Psychology screening information not available to physicians until following their portion of the visit <ul style="list-style-type: none"> • Many patients failed to complete the screening measures before medical visit, were instead reminded to complete during visit by physician • Screening data obtained after visit were less useful for physicians' clinical decision-making | Results sent to physician as soon as screening was complete Screening questionnaires sent earlier in the week Psychology team contacted families individually on the morning of their visits to prompt them to complete screener as needed |
| Patients with elevated scores had to be re-contacted to schedule a consult outside of medical visit time, and were sometimes lost to follow-up until next visit | |
| Patient engagement | |
| Separate endocrinology and psychology team patient encounters led to a decrease in patient acceptability of consults, particularly when patients/parents were uncertain of the reason for referral and/or experiencing perceptual barriers to participation (e.g., stigma about mental health care) | Physicians asked psychology team to join virtual visit before patient left encounter; provided summary of visit and recommendations as warm handoff to psychology, parallel to in-clinic handoffs (facilitated by switch to using Zoom integrated in Epic) Psychology encounters documented in EHR and routed to provider to view facilitated closure in communication loop |

Table 2 (continued)

| Challenges | Responses |
|--|---|
| <p>On telehealth, patients no longer a “captive audience”</p> <ul style="list-style-type: none"> • Patients/parents occasionally ended encounter early, declined to see psychology • Whereas families previously may have reserved more time for in-person visit, on telemedicine, patient/parent at home, expected to return to virtual school/work as soon as medical visit ended, less willing to extend visit • Lower completion rates on psychology screener (see Table 1) <p>COVID-19 pandemic presented new challenges for many patients; required a shift in type of services offered and how psychology team met patient needs</p> <ul style="list-style-type: none"> • COVID-19-related adjustment, fears and worries, isolation, family stress • Parent–child conflict due to increased time in shared spaces at home • Difficulties navigating virtual school <p>Liaison work became more challenging with limited referral options due to COVID-19</p> <p>Some patients and their families faced barriers to engaging with providers via telehealth</p> <ul style="list-style-type: none"> • Lack of access to smart devices, unreliable internet, no private space at home • Difficulty sustaining attention during appointments (i.e., “Zoom fatigue”) • Financial and social stressors related to COVID-19 pandemic | <p>Physicians framed psychology consult as part of medical visit/routine part of care rather than optional offering</p> <p>Warm handoff procedure instituted (see Table 1)</p> <p>Created and distributed COVID-19 resources document for clinic families</p> <p>Provided brief interventions during consult as appropriate</p> <p>Psychology team provided brief interventions during consult</p> <p>Identified outside providers offering services via telehealth</p> <p>Patients were able to come to the clinic and use an iPad to connect with their providers, who were offsite (a limited number of nursing staff were available onsite to coordinate)</p> <p>Psychology team used creative, interactive methods to engage patients during visits (e.g., playing an online game, using the Zoom Whiteboard feature, sharing screen to review materials)</p> <p>Psychology team routinely asked about COVID-19 stressors during patient visits and tailored recommendations based on family needs</p> |
| <p>Legal and ethical considerations</p> <p>Telehealth encounters introduced concerns regarding patient location (e.g., participation from car or work) and/or surroundings (e.g., to ensure patient privacy)</p> <p>Due to increased flexibility of telehealth, patients able to attend visit from out of state</p> <ul style="list-style-type: none"> • Patients might attend visit while traveling to another state within US (i.e., on vacation) or from residence outside of the US (i.e., whereas they would normally travel to the clinic, travel and/or financial restrictions may interfere) • Consulting psychologist not licensed in other countries, states • Creates ethical problems if there is a need to follow up on suicide risk or concerns about child abuse <p>Distributing generic time-unlimited screener links led to removing items related to suicide, given inability to ensure availability of psychology team to provide immediate support</p> <p>Addressing reports of suicidal ideation via telehealth</p> <p>Some patients are age 18 or older, so consent was necessary in order to speak with parents, but often only had parental contact information on file</p> | <p>Problem-solving with patients to ensure safety and confidentiality (e.g., use of headphones, identifying a separate space, rescheduling)</p> <p>Request that patient and family inform clinicians of their location</p> <p>Patients outside of the US were not able to receive services</p> <p>Described these limitations to the interdisciplinary team</p> <p>Systematically assessed for suicidal ideation during consultation</p> <p>Youth elevated on depression, anxiety, or eating disorders automatically receive consult; same for youth who score in at-risk range for four or more domains</p> <p>Assessing risk in the same manner as would be done in person</p> <p>Creating coping card using free apps (e.g., Safety Plan), identifying resources (e.g., suicide hotline)</p> <p>If child appears to be at risk, initiating process for voluntary or involuntary hospitalization as would be done in person</p> <p>Contacted caregiver to ask for child’s contact information (cell, email)</p> <p>Psychology subsequently communicated and coordinated directly with patient rather than caregiver</p> <p>Connected with patient after their medical visit to complete consult and to gain permission to speak with caregivers as needed</p> |

that arose related to feasibility of patient interactions, interdisciplinary collaboration, patient engagement, and ethical issues, as well as our corresponding responses. These are reviewed in more detail in the discussion section.

Cycle 1

During Cycle 1, which was initiated during the onset of the pandemic (early March 2020; see Fig. 1), the psychology

team sent a personalized, electronic version of the mental health screener to caregivers' email addresses the morning of their child's appointment. The personalized links could only be opened once and were associated with the caregiver's email address. Additionally, the links could only be used between 8 am and 5 pm on the day of the child's appointment to ensure that the psychology team could follow up immediately if the child indicated any suicide risk. Endocrinologists and diabetes educators referred patients to the psychology team for consultations, and the psychology team contacted caregivers by phone to schedule a virtual consultation via Zoom, a HIPAA-compliant video conferencing platform. Caregivers were required to complete and return a separate telehealth consent form before the consultation could occur.

Cycle 2

During Cycle 2, which was initiated in early April to address insufficient screening responses (see Fig. 1), the psychology team began calling caregivers on the morning of their child's visit to remind them to complete the mental health screener. The team also provided the endocrinologists with a list of patients to be screened each day so that they could provide additional reminders to youth who did not complete the screener before their visit. To address consultations during Cycle 2, the psychology team sent an email with mental health resources and psychology team contact information to the clinic's caregiver listserv to remind caregivers that the psychology team was available as needed for consultations. All Cycle 2 procedures were in addition to Cycle 1 procedures, which remained in place.

Cycle 3

In early May 2020, a university-wide EHR update allowed medical teams to conduct virtual visits with Zoom integrated in Epic, which removed the need for a separate consent form as caregivers were able to consent to telehealth services while accessing the virtual visit through their patient access portal. At this point, Cycle 3 was initiated for consultations. This involved creating a virtual warm handoff procedure, in which endocrinologists emailed the psychology team to join the medical visit, provided a brief summary of the medical visit and introduction to psychology, and then left the visit so that the psychology team member could meet with the family privately. Cycle 3 for screening was initiated in early June 2020 and involved a shift to using generic (rather than personalized) links to the screener that were sent several days in advance of the youth's medical appointment. Use of generic links allowed more time for the youth to complete the screener, as the links did not expire and could be completed at any

time. Additionally, personalized links were only able to be opened once, whereas the generic links could be opened multiple times (e.g., if child opened link and began survey, but did not complete it, they could return and re-open it later without the team sending a new link). The screener asked patients to input their name and date of birth, allowing responses to be connected to patients even when using the generic link. Because the psychology team is only available during the diabetes clinic times (i.e., 8am to 2 pm on Tuesdays and Thursdays), suicide items were removed from the survey. Questions about suicide were instead asked during virtual visits with youth who screened positive for other concerns (i.e., depression) or who received consultation for other concerns (e.g., difficulties with diabetes management).

Measures

We monitored screening and consultation rates on a monthly basis, as well as biweekly during the first month of the pandemic. The psychosocial screening rate was calculated by dividing the number of screeners completed by the number of screeners distributed per week. The psychology consultation rate was calculated by dividing the number of consultations completed by the total number of patients with diabetes seen in the clinic per week.

Results

Screening

As shown in Fig. 1, screener completion rates began to decline for 1 month prior to the shift to telehealth (67% in January to 51% in February). This decrease was unrelated to telehealth and corresponded to an adjustment in clerical responsibilities within our clinic that occurred in January. This trend continued in early March (48%) and coincided with a psychology trainee transition (i.e., the start of a new rotation cycle). We initiated Cycle 1 in response to the suspension of in-person services on March 17th, 2020 (see Table 1 for details). We initiated Cycle 2 in response to the continued decline in screening rates during the first 2 weeks of April (36%). Although interventions employed in Cycle 2 (i.e., phone call reminders to caregivers from psychology team morning of visit, reminders from endocrinologists during visit), seemed to initially improve rates (50% in late April), they were not maintained (43% by May). As such, we initiated Cycle 3 (i.e., shift to generic links to screener sent several days in advance of appointment) in June, which led

to a steady increase in screener completion rates (reaching 56% by August).

Consultation

Also displayed in Fig. 1, psychology consultation rates consistently corresponded to psychosocial screener completion rates, which is unsurprising given that many consultations are scheduled in response to elevated scores on the screener (Brodar et al., 2021). Thus, consultation rates also began to decline prior to the shift to telehealth (30% in December to 20% in February). As was the case for screening, we initiated Cycle 1 (i.e., psychology team contacted caregivers to schedule virtual consultation outside of medical visit, separate consent form required) in response to the suspension of in-person services (see Table 1 for details). We initiated Cycle 2 (i.e., mental health resource email sent to caregiver listserv with information about how to schedule a consult) in response to the continued decline in consultation rates between late March (13%) and early April (9%). Although Cycle 2 did not produce immediate effects (7% in late April), it was also interrupted by our institution integrating our HIPAA-compliant videoconferencing platform (Zoom) into the EHR. This change made it possible to develop a virtual warm handoff procedure, as the psychological portion of the visit no longer had to be scheduled for a separate time and did not require a separate consent process. As such, we initiated Cycle 3 (i.e., virtual warm handoff procedure) in early May following this change. Subsequently, we observed substantial increases in our consultation rates (31% in May), which remained close to our target rate of 25% until another psychology trainee transition and a surge in COVID-19 infections in South Florida in late July 2020 (The New York Times, 2021) was followed by another decrease (15% in August).

Discussion

This quality improvement initiative leveraged an iterative approach (i.e., three PDSA cycles) to increase psychosocial screening and psychology consultation rates within an outpatient pediatric diabetes clinic during the COVID-19 pandemic. Interventions employed during Cycles 1 and 2 did not produce desired outcomes for either target. However, increases in screening and consultation rates followed Cycle 3 interventions. Despite coming close to our target (60%), our team was inspired to continue implementing changes to ultimately obtain a completion rate that approached 100%. Thus, efforts to incorporate the screener into the EHR, which will require eligible patients to complete the screening questions as part of the telehealth and/or in-person visit check-in

process are underway. Results of this intervention are not yet available due to delays with implementing new procedures during the pandemic.

Our findings are limited in that we cannot draw causal inferences about the interventions we employed. It is likely that the changes we observed resulted from the combination of our specific intervention efforts, institutional changes, and the amount of time provided to acclimate to challenges presented by the COVID-19 pandemic and telehealth service delivery formats. As one example, the mental health resource email our team distributed was sent to families only 2 weeks prior to our institution integrating our HIPAA-compliant videoconferencing platform into the EHR, so it is difficult to determine the extent to which the two interventions differentially affected our outcomes. Likewise, our findings are likely specific to academic medical centers with access to psychology trainees and may not generalize to other clinic settings. Despite these limitations, our experience highlights several considerations for future practice relevant to a broad spectrum of integrated health settings. Furthermore, given room for improvement in pre-pandemic screening and consultation rates, procedures outlined in this paper reflect QI efforts addressing challenges that predated the shift to telehealth and may be relevant for application following the COVID-19 pandemic.

Recommendations

The Whole is Greater Than the Sum of Its Parts

The COVID-19 pandemic highlighted the need to prioritize cohesion and communication among interdisciplinary team members. Without careful attention to communication and shared decision-making among different providers, moving to a telehealth format could reinforce a multi-disciplinary model with siloed care as providers no longer share physical space. Interdisciplinary collaboration benefits patient care (Powell et al., 2015), allowing providers to learn from one another and approach patient care from a more holistic standpoint. We recommend that other clinics implement interdisciplinary communication via staff meetings or other formats at regular intervals and allot time during meetings to discuss continuous improvement efforts.

Elicit Feedback from all Team Members

After our first two PDSA cycles proved largely ineffective, Cycle 3 began with a needs assessment to obtain interdisciplinary perspectives on how to improve our procedures. Team members provided helpful insight and suggestions, which guided our approach. Additionally, medical providers became more aware of the low screening and consultation rates, which stimulated collaboration on procedural changes.

This is consistent with past research suggesting that including stakeholder perspectives facilitates engagement and uptake of new procedures (Manchester et al., 2014).

Leverage the EHR as a Centralized Resource

Prior to the pandemic, psychology documented patient encounters and screening results outside of the EHR used by medical providers, primarily because psychology notes were designated as “sensitive” and could not be viewed by other team members. The shift to telehealth revealed that challenges arising from these disconnected systems were transcended by team members sharing a physical space that facilitated interdisciplinary collaboration and coordination of care. However, without consistent verbal communication, it became apparent that accessing separate systems was an impractical and burdensome barrier to effective and efficient interdisciplinary collaboration. Efforts to ensure psychology team members can document patient encounters and results in the EHR and other team members can view such documentation served to resolve this issue. Other work documents how the EHR facilitates communication between providers and improves care coordination (O’Malley et al., 2010).

Warm Handoffs are Critical

When patients are physically present in the clinic, they have often taken time off from work or school to attend the visit and are more amenable to a brief wait period between meeting with the endocrinologist and psychology team. With telehealth, families might be squeezing medical visits between virtual school or work meetings and therefore be less interested in extending the visit. As such, clinics must have a virtual “warm handoff” system in place in which medical providers communicate to families the importance and relevance of psychological well-being within diabetes care. Warm handoffs demonstrate continuity between providers and reinforce the psychology consult as a routine part of care (Taylor & Minkovitz, 2021; Young et al., 2020).

Develop Clear Procedures for Navigating Legal and Ethical Concerns

We recommend reviewing and updating assessment and intervention procedures related to suicidality and abuse reporting (American Psychological Association, 2013; Campbell et al., 2018; see Table 2, “ethical considerations”). Clinics must consider the implications of youth being physically distant during consultations and have clear policies for how team members should address safety concerns.

Explore Patient Barriers to Telehealth

Although telehealth is an acceptable substitute for in-person encounters for many patients and families, it creates additional challenges for some families. For example, families may not have access to a smart device that could join the virtual visit, may feel uncomfortable using technology, may lack a stable internet connection, may not have a private location in which they could meet with their providers from home, or may not have adequate insurance coverage for telehealth visits (Frye et al., 2021). To connect with these individuals, clinics can offer a “hybrid” option where the patient and family can come to a clinic in person and use a clinic iPad to connect with their providers. This allows for a more limited number of staff to be present on site, which decreases infection risk while also ensuring that patients continue accessing services. Even for families who can access telehealth services, other factors may reduce patient engagement. For example, “Zoom fatigue,” or difficulty sustaining attention due to spending significant amounts of time viewing a computer screen, can affect patients and providers alike (Romanchych et al., 2021). Clinics should ensure that staff are able to take short breaks between patient visits and that staff receive training on how to engage patients via telehealth (e.g., Maheu & Wright, 2020). It is also important for clinics to ask families about financial and social stressors related to the COVID-19 pandemic, which may also affect their engagement with healthcare providers during visits.

Conclusions and Future Directions

The COVID-19 pandemic has served as a positive impetus for healthcare systems to review and update their procedures, particularly as providers have shifted to primarily seeing patients via telehealth. Telehealth has been described as “the new normal” and will likely continue even after the pandemic ends (Kumar et al., 2020; Perrin et al., 2020). Mental health providers in consultation-liaison roles must adapt to this shifting landscape, leveraging technology to maintain and/or expand their services. Telehealth offers several exciting possibilities to improve flexibility and convenience of services for patients and thus increase patients’ access to psychological care (Stancin, 2020).

In a post-pandemic world, mental health providers might consider a “hybrid” telehealth/in-person model of service delivery, where providers conduct consultations in person during medical appointments when possible, but can also offer services via telehealth at a time convenient for the patient’s family. In addition to increasing options for consultation services provided during medical visits, telehealth enables youth and their families to access psychological support more easily between visits by reducing barriers related to scheduling and transportation (Wade et al., 2020). Youth

who receive mental health referrals from their medical clinic seldom follow up and receive services (Vassilopoulos et al., 2019). Therefore, future research should examine the impact of telehealth on youths' access to psychological care when delivered through integrated health settings.

Author Contributions All authors collaborated on the procedural changes during COVID-19 reviewed in the manuscript. KB, NH, ML, & ED drafted the manuscript text, tables, and figures. All authors reviewed the manuscript and provided substantive feedback.

Funding Natalie Hong receives support from the National Institutes of Health under Award Number F31MH122101.

Data Availability Not applicable.

Code Availability Not applicable.

Declarations

Conflict of interest Kaitlyn E. Brodar, Natalie Hong, Melissa Liddle, Lisandra Hernandez, Judy Waks, Janine Sanchez, Alan Delamater, and Eileen Davis declare that they have no conflict of interest.

Ethical Approval The University of Miami IRB self-certification tool deemed this study exempt from formal review.

Consent to Participate Not applicable.

Consent for Publication Not applicable.

Human and Animal Rights This study did not include human participants. It involved a review of program-level data (clinic screening and consultation rates) and was conducted for the purpose of quality improvement.

Informed Consent Because the study did not involve human participants, informed consent was not required.

References

- American Psychological Association. (2013). *Guidelines for the practice of telepsychology*. American Psychological Association.
- Barney, A., Buckelew, S., Mesheriakova, V., & Raymond-Flesch, M. (2020). The COVID-19 pandemic and rapid implementation of adolescent and young adult telemedicine: Challenges and opportunities for innovation. *Journal of Adolescent Health, 67*, 164–171.
- Brodar, K. E., Davis, E. M., Lynn, C., Starr-Glass, L., Liu, J. H., Sanchez, J., & Delamater, A. M. (2021). Comprehensive psychosocial screening in a diverse pediatric diabetes clinic. *Pediatric Diabetes, 22*, 656–666.
- Campbell, L. F., Millán, F. A., & Martin, J. N. (Eds.). (2018). *A telepsychology casebook: Using technology ethically and effectively in your professional practice*. American Psychological Association.
- Carter, B. D., Tsang, K. K., Brady, C. E., & Kullgren, K. A. (2020). Pediatric consultation-liaison: Models and roles in pediatric psychology. *Clinical handbook of psychological consultation in pediatric medical settings* (pp. 11–24). Springer.
- Cifuentes, M., Davis, M., Fernald, D., Gunn, R., Dickinson, P., & Cohen, D. J. (2015). Electronic health record challenges, workarounds, and solutions observed in practices integrating behavioral health and primary care. *The Journal of the American Board of Family Medicine, 28*, S63–S72.
- Connolly, S. L., Miller, C. J., Lindsay, J. A., & Bauer, M. S. (2020). A systematic review of providers' attitudes toward telemental health via videoconferencing. *Clinical Psychology: Science and Practice, 27*, e12311.
- Frye, W. S., Gardner, L., Campbell, J. M., & Katzenstein, J. M. (2021). Implementation of telehealth during COVID-19: Implications for providing behavioral health services to pediatric patients. *Journal of Child Health Care*. <https://doi.org/10.1177/13674935211007329>
- Grist, R., Croker, A., Denne, M., & Stallard, P. (2019). Technology delivered interventions for depression and anxiety in children and adolescents: A systematic review and meta-analysis. *Clinical Child and Family Psychology Review, 22*, 147–171.
- Hawke, L. D., Monga, S., Korczak, D., Hayes, E., Relihan, J., Darnay, K., Cleverley, K., Lunsy, Y., Szatmari, P., & Henderson, J. (2020). Impacts of the COVID-19 pandemic on youth mental health among youth with physical health challenges. *Early Intervention in Psychiatry*. <https://doi.org/10.1111/eip.13052>
- Hill, J. E., Stephani, A. M., Sapple, P., & Clegg, A. J. (2020). The effectiveness of continuous quality improvement for developing professional practice and improving health care outcomes: A systematic review. *Implementation Science, 15*, 1–14.
- Kalin, M. L., Garlow, S. J., Thertus, K., & Peterson, M. J. (2020). Rapid implementation of telehealth in hospital psychiatry in response to COVID-19. *American Journal of Psychiatry, 177*, 636–637.
- Kumar, P., Huda, F., & Basu, S. (2020). Telemedicine in the COVID-19 era: The new normal. *European Surgery, 52*, 300–301.
- Maheu, M., & Wright, S. (2020). Trouble-shooting “zoom fatigue” in the era of telehealth. In Presented for the American Psychological Association. Retrieved August 15, 2021 from <https://www.apa.org/members/content/zoom-fatigue-slides.pdf>.
- Manchester, J., Gray-Miceli, D. L., Metcalf, J. A., Paolini, C. A., Napier, A. H., Coogle, C. L., & Owens, M. G. (2014). Facilitating Lewin's change model with collaborative evaluation in promoting evidence based practices of health professionals. *Evaluation and Program Planning, 47*, 82–90.
- Martin, J. N., Millán, F., & Campbell, L. F. (2020). Telepsychology practice: Primer and first steps. *Practice Innovations, 5*, 114–127.
- McCord, C., Bernhard, P., Walsh, M., Rosner, C., & Console, K. (2020). A consolidated model for telepsychology practice. *Journal of Clinical Psychology, 76*, 1060–1082.
- O'Malley, A. S., Grossman, J. M., Cohen, G. R., Kemper, N. M., & Pham, H. H. (2010). Are electronic medical records helpful for care coordination? Experiences of physician practices. *Journal of General Internal Medicine, 25*, 177–185.
- Perrin, P. B., Pierce, B. S., & Elliott, T. R. (2020). COVID-19 and telemedicine: A revolution in healthcare delivery is at hand. *Health Science Reports, 3*, e166.
- Powell, P. W., Corathers, S. D., Raymond, J., & Streisand, R. (2015). New approaches to providing individualized diabetes care in the 21st century. *Current Diabetes Reviews, 11*, 222–230.
- Romanchych, E., Desai, R., Bartha, C., Carson, N., Korenblum, M., & Monga, S. (2021). Healthcare providers' perceptions of virtual-care with children's mental health in a pandemic: A hospital and community perspective. *Early Intervention in Psychiatry*. <https://doi.org/10.1111/eip.13196>
- Speroff, T., & O'Connor, G. T. (2004). Study designs for PDSA quality improvement research. *Quality Management in Health Care, 13*, 17–32.

- Stancin, T. (2020). Reflections on changing times for pediatric integrated primary care during COVID-19 pandemic. *Clinical Practice in Pediatric Psychology, 8*, 217.
- Steinberg, D. M., Schneider, N. M., Guler, J., Garcia, A. M., Kullgren, K. A., Agoston, A. M., Mudd, E., Carter, B. D., & Judd-Glossy, L. (2020). Pediatric consultation-liaison psychology services during the COVID-19 pandemic: Pivoting to provide care. *Clinical Practice in Pediatric Psychology*. <https://doi.org/10.1037/cpp0000340>
- Taylor, R. M., & Minkovitz, C. S. (2021). Warm handoffs for improving client receipt of services: A systematic review. *Maternal and Child Health Journal*. <https://doi.org/10.1007/s10995-020-03057-4>
- Taylor, M. J., McNicholas, C., Nicolay, C., Darzi, A., Bell, D., & Reed, J. (2014). Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Quality & Safety, 23*, 290–298.
- The New York Times. (2021). *Florida coronavirus map and case count*. Retrieved June 1, 2021 from <https://www.nytimes.com/interactive/2020/us/florida-coronavirus-cases.html>.
- Vassilopoulos, A., Valenzuela, J. M., Tsikis, J., Reitblat, L., Blanco, E. J., Nicholls, S., & Wolf, R. M. (2019). Pediatric diabetes patients infrequently access outpatient psychology services following screening and referral: Implications for practice. *Children's Health Care, 49*, 202–217.
- Wade, S. L., Gies, L. M., Fisher, A. P., Moscato, E. L., Adlam, A. R., Bardoni, A., Corti, C., Limond, J., Modi, A. C., & Williams, T. (2020). Telepsychotherapy with children and families: Lessons gleaned from two decades of translational research. *Journal of Psychotherapy Integration, 30*, 332–347.
- Young, N. D., Mathews, B. L., Pan, A. Y., Herndon, J. L., Bleck, A. A., & Takala, C. R. (2020). Warm handoff, or cold shoulder? An analysis of handoffs for primary care behavioral health consultation on patient engagement and systems utilization. *Clinical Practice in Pediatric Psychology, 8*, 241–246.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.