A Brief Text-Messaging Intervention for Suicidal Youths After Emergency Department Discharge

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Research has shown that the months after hospital discharge following treatment for suicidal thoughts or behaviors is a high-risk period for suicide. Moreover, the needs of a subset of youths at increased risk for suicide are not being met by community mental health providers, resulting in frequent emergency department (ED) visits. While undertaking a quality improvement effort, the authors' health care system piloted caring text messages to support youths discharged from the hospital after screening positive for suicide risk in the ED. The text-messaging intervention was feasible and acceptable, and youths reported that the messages helped reduce their suicidal thoughts and behaviors postdischarge. The results of this text-messaging intervention prompted the Maryland Department of Health to offer a similar intervention to all Marylanders.

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In recent years, youth suicide rates have increased substantially (1). In 2019, suicide was the second-leading cause of death among persons ages 10–24 years (1). Increasing rates of suicidal thoughts and behaviors have led to a surge in the volume of adolescent hospital visits (2). During February and March 2021, emergency department (ED) visits for suicide attempts were 50.6% higher among females compared with the same period in 2019; among males, such ED visits increased 3.7% during this period (3). Research shows that the month after discharge from the hospital after treatment for suicidal thoughts and behaviors is an especially high-risk period for suicide (4).

Postdischarge outreach and support have been shown to reduce risk for suicidal thoughts and behaviors after an ED visit. Gordon and colleagues (5) note that follow-up efforts during care transitions, such as "caring contacts" to encourage ongoing social connection and treatment engagement, can improve functioning and reduce the frequency of suicidal behavior among adults by between 30% and 50% over the following year. The caring-contact approach can also remind youths to reach out to their mental health care provider or to call community crisis lines rather than seeking help in the ED. Caring contacts are now a recommended best practice for suicide prevention across all treatment settings (6). However, most caring-contact interventions have been used for adults, and research is scarce on how to integrate this approach into existing infrastructure for sustainment and scalability.

The purpose of this quality improvement project was to implement a brief caring text messaging–based intervention in the high-risk period after hospital discharge for adolescents treated for suicidal thoughts and behaviors. The goal of the project was to reduce the frequency of repeat visits to the pediatric ED (PED) for mental health reasons.

Methods

As a quality improvement effort, an automated text-messaging platform was created in collaboration with our Johns Hopkins ED colleagues and researchers in France who had developed and tested a similar system (7, 8). The Suicide Intervention Assisted by Messages (SIAM) caring-contact intervention was the basis for the platform used in our quality improvement efforts. A 2-year, randomized

HIGHLIGHTS

- A text messaging–based caring-contact intervention helped reduce suicidal thoughts and behaviors among youths who had screened positive for suicide risk after discharge from an emergency department.
- A caring-contact platform that uses text messaging is a way for providers to support youths at risk for suicide during the high-risk period following discharge from the emergency department.

controlled trial of SIAM for adult psychiatric patients provides strong evidence that text messaging–based follow-up interventions efficiently and effectively maintain contact and provide support for patients after a mental health–related hospital encounter (8).

In our setting, youths ages 12–17 years who sought help at the Johns Hopkins PED for suicidal thoughts or behaviors or screened positive for acute suicide risk on the Ask Suicide-Screening Questions (ASQ) tool (9) were eligible for participation. Youths had to have access to their own cellphone to participate. Youths were excluded if they had a history of or current psychosis symptoms.

The coordinator monitored the electronic health record (EHR) dashboard, which was updated in real time. When a patient entered the PED who was eligible for the text-messaging project, the coordinator contacted a member of the clinical team to confirm eligibility of the patient and to ask whether it would be appropriate to approach the patient about the project. A patient was approached only if accompanied by their legal guardian.

Participants and guardians who consented to the study were added to an automated text-messaging platform and received a series of four automated messages on days 1, 7, 14, and 30 after PED discharge. Because the platform is automated, SIAM does not have the system- and individual-level barriers to implementation that manual text messaging has, requiring dedicated staffing and monitoring in each shift within overburdened health care settings. The messages were sent to participants at 1 p.m. Eastern Standard Time. Text messages were customized to address each patient by name, included a brief caring message, and encouraged patients to contact their community mental health provider or the Maryland crisis line (211) if they were in crisis. The following is a sample message:

> Dear (patient's first name), we hope you are doing well. We are thinking about you and are wishing you the best. If you need any help, please contact your regular psychologist or psychiatrist. You may also contact the crisis hotline at (Maryland Crisis Hotline 211). Sincerely, Mary Cwik, Ph.D. Sent on behalf of your treatment team at Johns Hopkins Hospital.

During the consent procedure, the coordinator explained to the patient and guardian that text messages would come from an automated platform, making it impossible to communicate directly with the sender. Participants were told that they could reply to the text with "stop" to opt out of receiving messages, or "help" for a reminder to contact their provider if they were in distress and to receive the crisis hotline number. The platform had a feature that allowed the coordinator to track outbound messages (i.e., when each message was sent and whether it was received by the participant). The platform would also indicate whether any errors occurred for a scheduled message (i.e., participant did not receive the text). The latter feature allowed the team to troubleshoot errors in real time, which helped maintain high intervention fidelity.

To ensure participant safety, the coordinator frequently checked the automated text-messaging platform to monitor all incoming or outgoing messages. The platform also sent a text to the coordinator if a participant had responded to the platform. As an additional layer for ensuring participant safety, the developers, our colleagues in France, regularly communicated with the coordinator to check whether the automated platform was working correctly. All procedures were approved by the Johns Hopkins School of Medicine Institutional Review Board.

After they had received all four text messages, participants were contacted to complete a follow-up phone survey. The questions were designed to assess the feasibility and acceptability of the caring text message approach. Participants also reported whether they believed that the platform helped reduce their suicidal thoughts and behaviors during the study period. Finally, EHR data were examined to assess whether any participants had a repeat psychiatric visit within 6 months of consenting to participation in the program.

Results

Suicide risk screening as standard of care was established at the Johns Hopkins PED in March 2013. From 2016 to 2019, we examined encounters in our PED for patients ages 8–22 years. In total, there were 57,010 visits by 21,575 patients, of whom 1,481 (6.9%) screened positive on the ASQ for suicide risk. We noticed that 325 of those individuals who originally screened positive on the ASQ returned to the PED and screened positive at least four times during this 4-year period.

We obtained consent for 37 participants, 27 (73%) of whom completed the follow-up survey. Of the 27 participants with complete follow-up data, most identified as female (81%) and White (63%) and ranged in age from 12 to 17 years. Most participants presented to the PED with suicidal ideation (78%) and were admitted for inpatient psychiatric care (74%). See Table 1 for complete demographic characteristics, chief symptoms, disposition, and follow-up data of the study participants.

At follow-up, participants were asked 10 yes-no questions. Most participants endorsed being satisfied with the content of the text message (N=25, 93%), that they were content with the time of day they received the message (N=25, 93%), and that they did not find the messages annoying (N=24, 89%). Some participants indicated that they would have preferred to receive the text message sooner after discharge (N=8, 30%), and some participants indicated that they would prefer to receive the messages for a longer period (N=10, 37%). Most participants (N=25, 93%) indicated they felt that text messages were a good way to maintain contact with providers. A majority of participants indicated that the messages had a positive impact on their mental health (N=21, 78%), had reduced their suicidal ideation (N=18, 67%), and helped prevent them from engaging in suicidal behavior (N=20, 74%).

TABLE 1. Demographic characteristics, chief symptom, and disposition of youths who participated in the study survey (N=27)

Characteristic	N	%
Gender		
Male	4	15
Female	22	81
Transgender	1	<1
Race		
White/Caucasian	17	63
Black/African American	8	30
Asian	1	4
Other	1	4
Chief symptom		
Suicidal ideation	21	78
Suicide attempt	2	15
Mental health or psychiatric evaluation	3	11
Depression	1	4
PED disposition[a]		
Admit for psychiatric care	20	74
Transfer	3	11
Discharge	4	15
Repeat PED psychiatric visit within 6 months[b]	9	24

[a] PED, psychiatric emergency department.
[b] Of all 37 study participants.

An EHR record review indicated that nine (24%) of the 37 study participants had a repeat ED visit for psychiatric reasons within 6 months of entering the study. Six (16%) participants returned to the ED within 1 month, one (3%) within 3 months, and two (5%) within 6 months of joining the study.

Discussion

Our results indicate that the brief text-messaging intervention for youths with suicidal thoughts or behaviors was feasible and acceptable; moreover, participants reported that the intervention improved their mental health after PED discharge. Delivering caring contacts via text-messaging platforms is especially valuable in pediatric populations where most patients are comfortable with this mode of communication (10). As the COVID-19 pandemic continues, the value and importance of using technology to deliver sustainable health care have become paramount. This study provides preliminary evidence for the value of implementing an automated, text messaging–based approach consisting of follow-up caring contacts in busy health care settings such as PEDs.

It was promising that <25% of our sample of youths had a repeat ED visit for psychiatric concerns within 6 months, considering that this sample consisted of a high-risk group with almost three-quarters having been hospitalized. These results suggest that this follow-up intervention might help reduce ED recidivism rates, which is important to study in future controlled research. As most of the return visits took place within 1 month of the index visit, future text-based interventions should consider sending more frequent messages during that time.

It is worth noting that a text-messaging intervention may enable providers to maintain contact with patients and may even allow for providers to intervene if a patient experiences suicidal thoughts or behaviors. During this study, while checking the platform, the coordinator noticed that a participant had messaged the platform saying, "I'm dying." The coordinator immediately contacted the project principal investigator, and together they reached the participant's guardian at work. The guardian found that her child was in an acute suicidal crisis and was able to bring her child to our PED to initiate mental health care. After this incident, the guardian got in touch with our team and thanked us for "saving my child's life."

It would have been ideal to have had bidirectional communication between the participant and staff monitoring the text-messaging platform, but such setup would require 24/7 staffing. Future platforms could include linkage to a local crisis service so that participants can reach a trained crisis counselor. Partnering with community organizations, especially those specializing in suicide prevention, to support patients after discharge may make outreach interventions more scalable. An interactive platform may increase identification of a participant experiencing an acute suicide risk. If participants knew that they could communicate with the sender, they might be more likely to view this platform as a valuable resource in a time of acute crisis.

In response to this quality improvement effort, the Maryland Department of Health launched MD Mind Health (https://211md.org/escaping-sadness), a statewide, text messaging–based mental health initiative developed in partnership with the state's crisis 211 hotline. Supportive mental health–themed text messages in English and Spanish are sent through the program; the messages also remind recipients that immediate access to 24/7 mental health services is available via calling, texting, or chatting with 211 counselors. Caring text messages include self-compassion and self-care tips, recommended podcasts and apps, inspirational quotes, and information on how to access community resources.

Conclusions

We found that brief caring text messages are feasible, acceptable, and valuable for supporting young patients during the high-risk period after screening positive for suicide risk in the ED. As PED visits for suicide attempts are continuing to increase, it would be helpful for health care systems to use cost-efficient, effective, and sustainable interventions, such as a platform that sends caring text messages, that can be integrated into the existing workflow. Brief caring messages may be an unobtrusive, low-cost way to facilitate linkage to community mental health providers and services. The results of this study indicate that text-messaging interventions could likely be replicated in other PED settings with few resources and limited staff. Through partnering with local

crisis services, this outreach intervention could support patients in the high-risk period after an ED visit by bridging the gap to mental health care in the community.

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