

Suicide Attempt Prevention: A Technology-Enhanced Intervention for Treating Suicidal Adolescents After Hospitalization

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In this issue of the *Journal*, Kennard et al. (1) report on an innovative treatment development trial designed to address the tragic problem of suicide, reverse the pattern of increasing rates of deaths by suicide among young people, and help achieve our national and global goal of reducing the number of deaths by suicide. This randomized controlled trial focuses on youths who were psychiatrically hospitalized for suicide attempts or suicidal ideation, with the aim of reducing the risk of suicide attempts and episodes of serious suicidal ideation during the high-risk period after hospital discharge. This randomized controlled trial compares a technology-enhanced intervention, designed to reduce rates of suicide attempts and suicidal ideation, with treatment as usual. The technology-enhanced intervention had two major components: 1) a four-module in-person cognitive-behavioral therapy (CBT) intervention that combined skills training with motivational enhancement delivered during hospitalization (over about three sessions), followed by telephone contacts at 1 and 2 weeks after discharge to support safety plans, skills, and app use as well as linkage to recommended care and 2) a Health Insurance Portability and Accountability Act-compliant telephone app that provided daily texts requesting youths to rate their levels of emotional distress and that offered personalized distress tolerance and emotion regulation skills based on the initial CBT and allowed youths to upload materials to support skill use (e.g., photographs). When youths experienced severe distress, the safety plan developed during in-person CBT was presented and included clinicians as well as others who could be contacted. Differences between the treatment as usual and technology-enhanced intervention groups were not statistically significant on the primary outcome of suicide attempts or the secondary outcome of suicidal ideation, although the direction of observed effects suggested a possible advantage for the technology-enhanced intervention in reducing suicide attempts and time to suicide attempts. Unfortunately, this small treatment-development randomized controlled trial was adequately powered to detect only large effects. There was a significant moderation effect, with benefits from the technology-enhanced intervention being somewhat stronger among youths with previous suicide attempts, although the intervention effect was not statistically significant. Because the

technology-enhanced intervention focused on reducing the risk of suicide attempts after discharge, a secondary analysis excluded three participants whose suicide attempts occurred while they were in the hospital. When adjusting for significant covariates, results indicated a significantly longer time to suicide attempts among youths who received the technology-enhanced intervention compared with those who received treatment as usual, providing some support for the benefits of the technology-enhanced intervention.

There is increasing interest in technology-enhanced, eHealth, and mHealth interventions. Further, existing evidence indicates benefits of some technology-enhanced interventions when delivered in randomized controlled trials (2–4). Efforts to use technology-enhanced interventions under routine practice conditions to improve population health and behavioral health, however, have been disappointing. This stems partly from the relatively small numbers of patients receiving such interventions, resulting in a generally weak intervention dose when disseminated in health systems (4–6). This research-to-practice gap has led to weakened

interest in technology-enhanced intervention adoption and to calls for novel strategies for integrating technology-enhanced interventions within health care systems (e.g., stepped-care strategies) as well as alternative development and evaluation strategies (4–6). Importantly, as shown by Kennard et al., technology-enhanced interventions are likely to be most successful when development is informed by feedback from youths, families, and clinicians about what they view as acceptable, feasible, and useful.

An impressive finding in the trial was that more than 70% of youths in the technology-enhanced intervention used the app at least once, and there was evidence of active engagement with the app: 75% of youths added content to the app, 46% activated contacts, and the median number of times youths accessed their contacts was 21. This relatively strong intervention use may be related to the postdischarge telephone contacts aimed partly at supporting app use, a

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