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Expanding Adolescent Depression Prevention Through Simple Communication Technologies

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Adolescents are a tough group to pin down. Parents, by necessity, often replace face-to-face encounters with periodic spurts of texts. Just as this model of parent-to-child communication has changed, so should our models of adolescent health communication. And much like a parent struggling to get their message read and replied to, so health researchers are trying to learn the best practices for texting about health. That is why formative work to understand the perspectives of adolescents is so important.

In this issue of *JAH*, Ranney et al. [1] attempt to do just that. The investigators describe a mixed-methods study where 15 adolescents (ages 13–17 years), who screened positive for depressive symptoms and past-year peer violence at a single urban emergency department, were exposed to a 20-minute guided Powerpoint presentation followed by 8 weeks of an automated text messaging program. The texting program asks participants to report their mood and provides a support message based on their reported mood score. In postintervention interviews, the investigators found that adolescents liked the intervention, responded to the text message mood queries at high rates, and felt it filled a void in support that was not there. Like all good works of scientific experimentation, this study provokes us to ask many more questions than it answers.

One question is what role the emergency department should play in screening and preventing adolescent depression. For many adolescents, the emergency department may be their only intersection with the health care system [2]. Studies have shown that when older adolescent patients are screened in the emergency department, between 4% and 20% have moderate to severe depression [3], with half of all cases previously unrecognized by either the patient or family member [4]. Still, routine screening for mental health problems in emergency departments, including depression, has not become widespread [5]. This may largely be due to the lack of existing systems that link adolescents who screen positive with effective treatment, a barrier that could be overcome through the use of computerized “self-help” interventions [6].

To date, computerized interventions for depression have been largely modeled on multisession psychotherapies such as cognitive behavioral therapy (CBT). Studies have shown that these computerized interventions can be effective at reducing depressive

symptoms [7]. However, the adherence to such programs is suboptimal [8,9]. In a recent trial, only about one in six participants completed all their assigned computerized CBT sessions, with most logging on for only one time [10]. In addition to efforts aimed at making these interventions more user friendly, behavioral scientists are looking to different computerized designs.

One particular group of computerized behavioral interventions that are rapidly gaining attention and supportive data are ecological momentary interventions (EMIs) [11] or just-in-time-adaptive interventions (JITAI) [12]. They typically use longitudinal in-situ self-monitoring of thoughts, feelings, behaviors, or physiological data to guide tailored behavioral feedback and materials. For mental health, in particular, EMIs have been shown to produce a small to medium effect on outcomes [13]. The EMI intervention developed by Ranney as well as other similar interventions [14] trades the deep dives of infrequent CBT sessions with brief, yet frequent interactions in effort to “sculpt” a behavior over time. By proactively prompting individuals to interact through instantaneous communication, they lower the barriers to engagement. In leveraging a communication technology (text messaging, aka SMS) that is ubiquitous as well as commonly used among older adolescents, they offer the possibility of scale [15].

Of course, expanded use of these technologies makes us ask uncomfortable questions like whether a computer can provide as good of support as a human and whether we can actually form a “therapeutic relationship” with a computer. These conflicted feelings are reflected in the Ranney et al. study where adolescents extoll the ease of disclosure and lack of feeling judged but complain about the lack of human feeling or “touch.” This question may become more difficult to answer as computers are programmed to react to affective signals in text or speech and are able to emote in ways that make them more human-like. Still, science has shown that human support may be necessary for long-term engagement with computerized behavioral interventions [16], and others posit that humans are a necessary adjunct to computerized interventions in that they provide supportive accountability [17].

Despite these many questions, one thing is inevitable: progress. In time, we will learn how best to leverage communication technologies to provide effective depression prevention in vulnerable adolescents. This may involve expanded use of native sensors on mobile phones to predict depression episodes [18]. It may also involve analyzing the relationship between mood and contextual environmental and social events, which could be used to provide more specific tailored support. It could include stepped care models, whereby individuals exhibiting negative trajectories of mood over time could be referred to more intensive care [19]. As this work by Ranney et al. shows, we need to continue to listen to adolescents and learn from them, however they choose to communicate with us.

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