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Mobile Health (mHealth): Building the Case for Adapting Emerging Technologies for Justice-Involved Youth

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The term justice-involved youth encompasses a broad range of youth. It can include youth who have not been detained and have been placed on probation or diversion programs, as well re-entry populations transitioning out of detention facilities or stated custody and placed on probation or parole. There are more than 1.3 million juvenile arrests per year, and on any given day there are 50,821 youth incarcerated in the United States. Of the 716,000 delinquency cases, probation is court-ordered for approximately half.[1] Even among these youth who are supervised in the community, rates of mental health and substance use disorders are high, with more than two-thirds reporting substance use problems or other mental health disorders.[2] However, these youth often have a hard time connecting to and staying in treatment,[3] and recidivism is high—most commonly for failing to satisfy the myriad (and well intentioned) conditions of their probation.[4] Dual diagnosis (ie, co-occurring psychiatric and substance use disorders) in justice-involved youth is one of the most significant predictors of recidivism,[5] and, as such, closing the gap between need and receipt of substance use and mental health treatment for justice-involved youth could potentially offset rates of re-offending into adulthood.[6] Despite high rates of mental health and substance use disorders among justice-involved adolescents, only 15% of detained youth receive mental health treatment for their condition(s); this number falls to 8% once these youth re-enter the community.[7] These statistics regarding treat-ment receipt among justice-involved youth are important to consider not only from a health care perspective but also in terms of public health significance and policy.

Most juvenile justice-involved youth on probation/parole are involved in court-mandated services and court-referred care. When youth are on placed on probation or parole and

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involved in court-referred care, the "to-do list" for them and their caregivers is typically long, requiring organization, service navigation, and prioritizing appointments with various providers across different systems of care that are often siloed. In addition to attending court hearings, youth on probation/parole (with the help of their caregivers) must meet regularly with probation/parole staff, re-enroll and attend school, participate in substance use and/or mental health treatment, and participate in family counseling. Youth who have been detained often return to families who may be in distress and/or unable to help them navigate and attend to their probation/parole demands in the community due to limited resources and pre-existing barriers to accessing treatment. Unfortunately, these barriers may also include accessing Medicaid, a challenge that can further complicate healthy re-entry trajectories, as youth and families are unable to access the requisite insurance entitlements necessary to connect to vital mental health and substance use treatment. Accordingly, youth and their families often have difficulty engaging in services and connecting with treatment upon re-entry, which can result in missed appointments and a disrupted continuum of care. Many child and adolescent psychiatrists therefore witness youth cycling in and out of detention settings due to poor treatment attendance and low medication adherence. Failure to comply with any of these action items can result in re-arrest and re-incarceration. In fact, it is estimated that within California, 81% of youth recidivate within 3 years, and that most recidivism is related to failure to comply with terms of probation/parole that often includes psychiatric care.[4,8]

Psychiatrists have a role to play in addressing these barriers and should be at the forefront of developing novel approaches to identify facilitators to engagement in mental health and substance use treatment. The breadth of digital health technologies, which includes mobile health (mHealth), wearables, telehealth, and telemedicine holds promise. Notably, the advance of mHealth tools (use of mobile devices such as cellphones to facilitate health care delivery) for psychiatric care engagement, assessment, and intervention for other in-need populations hold significant potential for improving psychiatric outcomes for justice-involved youth. Technology applications, such as text messaging, can be low-cost, time-efficient, and efficacious ways of reaching vulnerable populations to facilitate treatment engagement. Numerous studies demonstrate that mHealth and text-messaging approaches have shown promise in addressing a diverse array of health needs in adolescent populations in a variety of areas: reducing HIV risk-taking behaviors, promoting recovery in adolescents, and managing diabetes, hypertension, and asthma.[9]

Moreover, American youth have been identified as high-volume texters, with adolescents (aged 13–17) sending or receiving 3,339 texts a month (six texts per waking hour) and young adults (aged 18–24) sending or receiving 1,630 (three texts per waking hour).[10,11] Catalani *et al.* conducted a systematic review of the literature and established that eHealth (Web-based technologies for health) and mHealth (mobile devices for health) create opportunities to engage at-risk populations in HIV prevention, including testing, treatment, and a continuum of care.[12] Another study that focused on using a cellphone-based program to reinforce the skills taught in an aftercare program found that juveniles who participated in the class, followed by cellphone coaching, had lower rates of recidivism than comparable juveniles who did not receive the cellphone-based program.[9] Recently, the Food and Drug Administration has recog-nized the role that digital health can play in reducing in-

efficiencies and cost, as well as improving access, quality, and personalization of health care delivery.[13]

Yet, despite its tremendous promise to promote improved psychiatric, substance use, and legal outcomes for justice-involved youth, the use of mHealth technologies in this way remains nascent. Potential applications and utility for text-messaging approaches for justice-involved youth are broad. For example, when youth and their families appear in court, information regarding (1) their rights, (2) terms of probation/parole, or (3) mental health and substance use treatment relayed in court proceedings are often presented verbally and not provided in written documents for the youth and family to reference at a later point. Many youth and their families experience confusion around court and probation expectations and face challenges in how to prioritize competing demands. Web portals, for example, could host this information and be accessible to families "on demand," in addition to co-locating critically important information about psychiatric follow-up, including medication information.

Potential applications for mHealth also extend beyond organizer/calendar functionality. For example, mHealth could provide reminder text-alerts for appointments for court hearings and mental health and substance use treatment, thereby potentially enhancing treatment adherence and promoting relapse prevention and/or reduction in psychiatric symptoms. Youth could also receive information about community resources, including information about healthy recreation in the neighborhoods near them as well as self-care and mindfulness strategies to encourage self-monitoring and self-efficacy. Other potential benefits include the ability to buttress the existing connections between youth and their clinicians and probation staff by providing a platform for two-way communication to enhance case management and treatment participation. Such functionality may also include facilitating structured (and private) information sharing and collaboration across the multidisciplinary providers who are intimately involved with these youth populations, but who often do not have a systematic and easily accessible way to connect for coordination purposes.

Considering that an estimated 80% of justice-involved youth recidivate within 3 years[8] and that most episodes of recidivism are related to failure to comply with court appointment and service referrals for mental health and substance use treatment,[4] receiving text-message reminders to attend court, probation, and/or health-related appointments may prove helpful in changing the health trajectories of these youth. At present, most juvenile justice jurisdictions are not using the available technology to help our most vulnerable kids stay out of custody. Partnering with child and adolescent psychiatrists to develop mHealth programming for justice-involved populations offers the possibility of a simple, low-cost way to reduce recidivism by addressing service gaps and the significant associated public health costs. It is estimated that 7 billion dollars a year are spent on costs associated with recidivism for justice-involved youth, and these figures do not include the negative impact on families and communities. Increasing engagement in court-referred programming, such as reducing rates of absconding and missed appointments are all potential upsides of an mHealth technology package that would be tailored to meet the needs of justice-involved youth and families.

Child and adolescent psychiatrists can play a pivotal role in developing novel approaches to improve psychiatric, substance use, and legal outcomes for justice-involved youth, and this should include the development and application of mHealth technologies. We are first-hand witnesses of how engagement in mental health and substance use treatment can reduce the risk of recidivism and relapse. Thus, improving treatment access and engagement should be a priority for those treating justice-involved youth, and adopting mHealth solutions can play an essential role in this effort.

We offer several recommendations for future areas of effort:

1. Develop clinical system protocols that standardize use of mHealth technologies (texting, video chat) as tools for youth and family psychiatric services engagement, assessment, and/or intervention (eg, telehealth);

2. Train clinicians in the use of mHealth technologies in association with probation, parole, or aftercare, or community workers for patient engagement and care;

3. Consider ethical issues in the different application possibilities; concerns around cross-system information-sharing, youth/family privacy and confidentiality must be assessed (eg, Health Insurance Portability and Account-ability Act of 1996 [HIPAA] compliant systems for communicating);

4. Evaluate existing use of technologies (eg, text messaging) by the involved systems, clinical providers, and/or legal personnel (eg, probation officers), to assess what is currently being used in nonsystematic ways and whether/how this is affecting youth outcomes;

5. Develop pilot studies that assess prototype mHealth and digital health solutions for the multifaceted needs of justice-involved populations and their families;

6. Enroll youth and families in developing the applications;

7. Use mHealth as a means of data acquisition to support big data analytic approaches concerning justice-involved youth in the community, including their mental health and substance use status, their involvement with services, their interpersonal relationships with families, and other data that could inform intervention development to promote positive behavioral health and legal outcomes for these underserved youth.

Acknowledgments

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