The Role of Technology-Based Interventions for Substance Use Disorders in Primary Care: A Review of the Literature

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KEYWORDS

• Technology • Addiction • Mobile • Substance-related disorders

KEY POINTS

- The burden of alcohol and drug use disorders (substance use disorders [SUDs]) has intensified efforts to expand access to cost-effective psychosocial interventions and pharmacotherapies.
- This article provides an overview of technology-based interventions (eg, computer-based and Web-based interventions, text messaging, interactive voice recognition, smartphone apps, and emerging technologies) that are extending the reach of effective addiction treatments both in substance use treatment and primary care settings.
- This article discusses the efficacy of existing technology-based interventions for SUDs, prospects for emerging technologies, and special considerations when integrating technologies in primary care (eg, privacy and regulatory protocols) to enhance the management of SUDs.

INTRODUCTION

The burden of alcohol and substance use disorders (SUDs) is significant. For example, costs associated with opioid use disorder in 2013 were estimated at $78.5 billion and opioid-related overdose deaths have increased by 200% in the last 15 years.[1] Excessive

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alcohol use remains a leading modifiable cause of death and cost an estimated $250 billion in 2010.[2,3] However, nearly 50 years after the introduction of pharmacotherapies for SUDs, fewer than 10% of individuals with SUD are linked to treatment.[4]

Primary care settings are optimally positioned to reduce the burden of SUDs by providing a patient-centered care model for addiction treatment and related comorbidities (prescribing pharmacotherapies, patient education, and access to specialty care).[5,6] Costs of expanding addiction treatment to office-based settings are offset by reductions in emergency department visits and hospitalizations, and improved addiction and medical outcomes.[6,7] However, effective management of SUDs is seldom delivered in primary care. Patient-level barriers to office-based management of SUDs include cost, insurance limitations, stigma, and transportation.[8,9] Among physicians trained in SUD care, lack of adequate administrative and clinical support impede the delivery of effective medication-assisted therapies and psychosocial interventions targeting SUDs.[10,11]

The integration of innovative technology-based interventions (eg, computer-based and Web-based interventions, text messaging, interactive voice recognition, smartphone apps, and emerging technologies) in primary care has the potential to address gaps in care for individuals with SUDs (**Table 1**).[12–14] This pairing of effective

Table 1
Published data on technology-based interventions for substance use disorders

Reference	Device	Target Substances	Target Behaviors or Behavior Change Model	Contact Information
Carroll, et al,[34] 2008	Internet/Web	Alcohol, cocaine, opioid, cannabis	CBT	http://www.cbt4cbt.com/
Marsch et al,[36] 2014	Internet/Web	Opioids	CRA, CBT	http://www.c4tbh.org/
Postel et al,[37] 2010	Internet/Web	Alcohol	CBT, biopsychosocial model	www.lookatyourdrinking.com
Campbell, et al,[38] 2014	Internet/Web	Alcohol, cocaine, cannabis, opiates, stimulants	CRA	http://sudtech.org/
Stoner et al,[43] 2015	Text message	Alcohol	Adherence to oral naltrexone	sastoner@uw.edu
Dulin et al,[56] 2013	Smartphone app	Alcohol		http://stepaway.biz/
Gustafson et al,[23] 2014	Smartphone app	Alcohol	Self-determination theory, cognitive-behavioral relapse prevention	https://chess.wisc.edu
Kay-Lambkin et al,[82] 2011	Internet/Web	Alcohol	Depression	http://www.shadetreatment.com/

Abbreviations: CBT, cognitive behavior therapy; CRA, community reinforcement approach.