The Community Guide

Tobacco Use: Mobile Phone-Based Cessation Interventions (2011 Archived Review)

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Intervention Definition

Mobile phone-based cessation interventions use interactive features to deliver evidence-based information, strategies, and behavioral support directly to tobacco users who want to quit. Typically, participants receive text messages that support their quit attempt, with message content changing over the course of the intervention.

Content may be developed or adapted for specific populations and communities. Messages may be tailored for individuals based on computer algorithms that match messages to information provided by the participant. Programs may be automated, and they may include text responses provided on demand to participants who feel an urge to smoke.

Mobile phone-based interventions may be used alone or with additional interventions.

Summary of CPSTF Finding

The Community Preventive Services Task Force (CPSTF) recommends mobile phone-based interventions for tobacco cessation to increase tobacco use abstinence among people who want to quit.

About The Systematic Review

The CPSTF finding is based on evidence published in 2009 (Whittaker et al., search period through December 2008) combined with more recent evidence (search period December 2008–August 2011).

The systematic review was conducted on behalf of the CPSTF by a team of specialists in systematic review methods, and in research, practice, and policy related to reducing tobacco use and secondhand smoke exposure.

Summary of Results

The systematic review included six studies.

- Mobile phone interventions used alone increased cessation rates by a median of 2.9 percentage points at six months (3 studies).
- Mobile phone interventions used in combination with internet-based components increased cessation rates by a median of 9 percentage points at six months (3 studies).

Summary of Economic Evidence

An economic review of this intervention did not find any relevant studies.

Applicability

Applicability of the CPSTF finding to U.S. settings and populations is unclear and requires additional research. This is especially true for populations with disparities in tobacco use or access to cessation services and for older adults.

Study Characteristics

- Studies were conducted in Norway, New Zealand, and the United Kingdom.
- All six included studies were randomized controlled trials and assessed self-reported (4 studies) or biochemically verified (2 studies) cessation outcomes at 6- or 12-month follow-up.

- The median loss to follow-up rate was 10%.
- One study included nicotine replacement therapy, which was provided to participants in both the intervention and comparison groups.

Review References

Whittaker R, Borland R, Bullen C, et al. Mobile phone-based interventions for smoking cessation. *Cochrane Database of Systematic Reviews* 2009, Issue 4, Art. No.: CD006611. DOI: 10.1002/14651858.CD006611. pub2.

CPSTF Finding and Rationale Statement

Intervention Definition

Mobile phone-based cessation interventions use interactive features to deliver evidence-based information, strategies, and behavioral support directly to tobacco users interested in quitting. Typically, participants receive text messages that support their quit attempt, and the message content changes over the course of the intervention. Content may be developed or adapted for specific populations and communities. Messages may be tailored for individuals based on computer algorithms that match messages to information provided by the participant. Programs may be automated, and they may include text responses provided on demand to participants encountering urges to smoke. Mobile phone-based interventions may be coordinated with additional interventions, such as Internet-based cessation services or provision of medications.

CPSTF Finding (December 2011)

The Community Preventive Services Task Force recommends mobile phone-based interventions for tobacco cessation based on sufficient evidence of effectiveness in increasing tobacco use abstinence among people interested in quitting. Evidence was considered sufficient based on findings from six studies in which mobile phone-based interventions were implemented alone or in combination with Internet-based interventions.

Rationale

Basis of Finding

The Task Force finding is based on studies identified in a previous systematic review (Whittaker et al. 2009, search period through December 2008) combined with studies identified in an updated search for this review (search period December 2008 through August 2011). Primary evidence for the Task Force finding comes from six studies that evaluated the effectiveness of interventions using automated text messages for recruited participants willing to make a quit attempt. In three studies, mobile phone text messaging was the primary cessation support intervention. The median difference in cessation rates at 6 months was an improvement of 2.9 percentage points (range of values: +1.7 percentage points to +4.9 percentage points). In the other three studies, mobile phone messages were complemented by Internet-based components. The median difference in cessation rates at 6 months or longer was an improvement of 9 percentage points (range of values: -1.2 percentage points to +13.3 percentage points). Only one study included nicotine replacement therapy, which was provided to participants in both the intervention and comparison groups.

Applicability and Generalizability Issues

The included trials were conducted in Norway, New Zealand, and the United Kingdom. Although the included studies collected information on age, race/ethnicity, and socioeconomic status (SES), cessation outcomes were not stratified on these user characteristics. Applicability of the evidence on effectiveness in these studies to U.S. settings and populations (especially to populations with disparities in tobacco use and access to cessation services) is unclear and requires additional investigation. Recruitment rates for older tobacco users were low; thus, applicability of this evidence to older users is unclear.

Data Quality Issues

All six included studies were randomized controlled trials and assessed self-reported (four studies) or biochemically verified (two studies) cessation outcomes at 6- or 12-month follow-up. The median loss to follow-up rate was 10% (range of values: 5% to 27%).

Other Benefits and Harms

No substantial other benefits or harms were identified.

Economic Evidence

This updated review did not identify any published studies providing an assessment of the economic costs and benefits of mobile phone-based interventions for tobacco cessation.

Considerations for Implementation

Mobile phone-based interventions can be targeted to specific populations, automated to provide tailored content to individual users, and should be scalable to system resources and user demand. However, these interventions require on-going advertising and service promotion to ensure use. Although the emergence of smartphones will provide opportunities to coordinate additional cessation support around short text or video message-based interventions, most mobile cessation applications currently available to smartphone users do not provide, inform, or link to evidence-based treatments such as counseling, quitlines, and medications.

Barriers to the use of these interventions include concerns about the technologies (matching program, network, and user capabilities) and the protections required to ensure confidentiality of participant information.

Evidence Gaps

Because of limited information specific to the U.S., additional intervention implementation research assessing both effectiveness and economic efficiency in U.S. settings and populations is needed. Although the published studies provide some information on recruitment of study participants, an economic evaluation of a sustained effort to promote the service and to recruit tobacco-using participants is also needed. Future intervention research should involve health departments and organizations, health care systems, and quitline services to enable comparisons of use, effectiveness, and economic efficiency across these different implementation settings.

Supporting Materials

Evidence Gaps

The CPSTF identified several areas that have limited information. Additional research and evaluation could help answer the following questions and fill remaining gaps in the evidence base.

- Are interventions effective and cost-effective in the United States?
- What are the costs of sustaining programs (e.g., promoting services to recruit participants)?
- How would programs vary in effectiveness and cost-effectiveness by setting (e.g., health departments and organizations, health care systems, quitline services)?

Included Studies

The number of studies and publications do not always correspond (e.g., a publication may include several studies or one study may be explained in several publications).

Borland R, Balmford J, Benda P. Population-level effects of automated smoking cessation help programs: a randomized controlled trial. *Addiction* 2013; 108(3): 618-28.

Brendryen H, Drozd F, Kraft P. A digital smoking cessation program delivered through internet and cell phone without nicotine replacement (Happy Ending): randomized controlled trial. *Journal of Medical Internet Research* 2008;10(5):e51.

Brendryen H & Kraft P. Happy Ending: a randomized controlled trial of a digital multi-media smoking cessation intervention. *Addiction* 2007;103:478-84.

Free C, Whittaker R, Knight R, et al. Txt2stop: a pilot randomized controlled trial of mobile phone-based smoking cessation support. *Tobacco Control* 2009;18:88-91.

Free C, Knight R, Robertson S, et al. Smoking cessation support delivered via mobile phone text messaging (txt2stop): a single-blind, randomized trial. *Lancet* 2011;378:49-55.

Rodgers A, Corbett T, Bramley D, et al. Do u smoke after txt? Results of a randomized trial of smoking cessation using mobile phone text messaging. *Tobacco Control* 2005;14:255-61.

Whittaker R, Dorey E, Bramley D, et al. A theory-based video messaging mobile phone intervention for smoking cessation: randomized control trial. *Journal of Medical Internet Research* 2011;13(1):e10.

Disclaimer

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