Learning Community Draft Report: Recommended Best and Promising Practices on Technology-Mediated Services for Quitlines

|OCTOBER 2021|

This report contains draft recommendations for quitlines on technology-mediated services that are effective for improving reach, engagement, and outcomes. You are invited to provide feedback on the draft recommendations (see instructions on page 3). We will accept comments through close of business on ***October 29****. A final report will be published in November 2021.*

Background

Quitlines are expanding cessation services beyond the traditional phone to include digital options such as text, web, and Apps to stay current, meet their target audience needs on preferred platforms, and ultimately maximize reach and efficacy. Consistent with NAQC's strategic vision for 2025, there is support for positioning Quitlines as the hub of cessation services with scalable, evidence-based, and research-informed treatment options. Quitlines acknowledge that while direct calls are still the greatest source of entry, expansion with integrated technologies is necessary to evolve with the times and consider new approaches to expanding reach, engagement, and efficacy.

Goals of the Learning Community

The North American Quitline Consortium (NAQC) began a Learning Community project to assess Quitline practices on technology-mediated services. NAQC published a Brief in 2020 that includes a review of the literature and practice of Quitlines on the utilization of technology-mediated services. Subsequently, NAQC hosted two Learning Community meetings in 2021 focused on research findings and innovative Quitline practices to consider key questions and recommend the next steps. These structured forums were designed to offer learnings from expert panelists, respondents, and researchers who provided presentations, dialogues, breakout sessions, and feedback on best and promising practices on technology-mediated services and their feasibility in real-world settings.

Intended Audience and Organization for this Report

This NAQC report is designed for all Consortium members and the community interested in expanding their knowledge of technology-mediated services within Quitline environments. These include:

Funders: State entities who fund Quitline services
Service Providers: The operators of Quitlines who develop and deliver services
Researchers: Those who advance the evidence-base and evaluate Quitlines

This report presents draft recommendations to the field on expanding traditional Quitline services towards multimodal service delivery that includes cost-effective technology-mediated options such as text messaging programs, web-based services, and mobile Apps. It is organized as follows:

- Glossary of terms
- Definition and criteria for levels of evidence
- Request for feedback
- Draft recommendations
- Supporting evidence and rationale for the recommendations (Table 1)
- Acknowledgements and Funder
- References

Glossary of Terms

Text Messaging: Brief electronic messages sent to mobile phones. They may follow either the Short Message Service (*SMS*) standard, which allows up to 160 characters of text, or the multimedia message service (*MMS*) standard, which allows more than 160 characters of text, as well as images, video, and audio (NAQC, 2016). They are considered 'one-way' when they are sent in one direction and do not have the capacity for a response. They are considered 'interactive' when messages may be sent in both directions, such as between a Quitline participant and counselor. They are 'tailored' when they are personalized based on unique qualities or needs around timing, frequency, etc.

Web-based Services: Internet-based communications such as webpages or websites with resources (e.g., documents, links, images, videos), and interactive communication tools (e.g., self-help, interactive counseling and chat, internet forums, chat rooms, online courses or social media) (NAQC, 2016).

Mobile Apps: Software applications that can be downloaded to a smartphone or tablet from a distribution platform such as the Apple App Store or Google Play; once downloaded, they can be used without an internet connection, though some features may be fully functional only while online (NAQC, 2016)

Outreach: The extent of reaching out in a proactive manner through phone, text, Web or Apps. Utilizing promotions to improve reaching diverse populations of individuals to enroll them into Quitline services.

Enrollment: The action of enrolling or being enrolled into Quitline services through phone, text, Web or Apps.

Engagement: The action of interacting with participants enrolled in Quitline services through phone, text, Web or Apps for the purpose of sustaining their interest and promoting active involvement.

Intervention: The action or process of intervening with Quitline participants through phone, text, Web or Apps to achieve defined program outcomes.

Evaluation: The use of text, Web or App services for the purpose of promoting and reminding participants about upcoming evaluations of services utilized through a Quitline.

TCPA Telephone Consumer Protection Act (TCPA): The Telephone Consumer Protection Act of 1991 was passed by the United States Congress in 1991 and signed into law by President George H. W. Bush as Public Law 102-243. The TCPA restricts telephone solicitations and the use of automated telephone

equipment. The TCPA limits the use of automatic dialing systems, artificial or prerecorded voice messages, SMS text messages, and fax machines. Compliance with these standards has relevance for Quitlines who are required to obtain consent from participants prior to sending text messages.

Definitions and Criteria for Levels of Evidence

To assess the levels of evidence for the recommendations for each mode of technology and associated purpose (i.e., intervention, outreach, enrollment, engagement, or evaluation), NAQC has adopted criteria for Quitline services presented by Anderson (2016) for best and promising practices, and insufficient evidence to recommend.

A. Best Practices

- Research-validated practices whose efficacy has been demonstrated as effective based on results of cited meta-analytic reviews such as Cochrane Reviews
- Field-tested practices that have a compelling rationale from widespread practice and success

B. Promising Practices

- Practices that have one or more limited examples of success in the research literature or Quitline practice

C. Insufficient to Recommend

- Practices that lack strong examples and consistent findings in the literature and/or Quitline practice.

Request for Feedback

NAQC would greatly appreciate your feedback on the draft recommendations. We ask that you consider the following questions:

1. Are these recommendations reasonable?
2. Do these recommendations seem based on solid evidence?
3. Are there any changes you suggest to the recommendations?
4. What resources, training or technical guidance will you need to implement the recommendations by the proposed date?
5. Are there any additional comments you have?

There are three opportunities for you to provide feedback:

- Attend the webinar on **Monday, October 25 at 3:00 p.m. ET** to provide comments.
- Submit written comments through the Learning Community Portal. For more information on how to join the portal, please review the User Guide or contact naqc@naquitline.org.
- Submit written comments to Laurie Krupski at lkrupski@naquitline.org. Comments may be submitted until close of business on **Friday, October 29th.**

For questions, please contact Laurie Krupski, senior program manager at lkrupski@naquitline.org.

Draft Recommendations for Technology-Mediated Quitline Services

Texting Services

Recommendation 1: All Quitlines should offer at least one or more tailored and/or interactive texting service as a standalone intervention or adjunct to other smoking cessation interventions by June 30, 2022.

Level of evidence: Offering interactive and/or tailored text messaging programs for the purpose of interventions to Quitline participants is a research-validated best practice.

Notes and Suggestions: This recommendation can be implemented using texting services developed by Quitline service providers or external vendors or by leveraging Federal programs with free text-messaging services. Services should be closely based on interventions proven effective and should include content scheduled at relapse sensitive intervals around a quit date, frequent messages, extended duration and be interactive and tailored (NAQC, 2016). A demonstrated impact from texting services is more likely when other cessation support services are minimal (Whittaker, et. al., 2019). Additionally, Quitlines should follow the Telephone Consumer Protection Act (1991) compliance regulations around providing consent to receive a text message.

Recommendation 2: All Quitlines should offer at least one or more tailored and/or interactive texting service for the purpose of improving outreach, enrollment, and/or engagement by June 30, 2023.

Level of evidence: Offering interactive and/or tailored text messaging programs for the purpose of outreach, enrollment, or engagement in a Quitline setting is a promising practice.

Notes *and Suggestions:* Although presently there is not aggregated Quitline data on texting for outreach, enrollment, and engagement, we learned these applications are underway in Quitline settings. Regarding outreach, service providers are exploring creative ways to obtain consent for texting. Also, texting is used to reinforce priority messaging, support from healthcare professionals and access to health plan cessation benefits. It also provides an opportunity to expand reach to teens, young adults and other populations who prefer to text than call. Some service providers offer direct text enrollment for youth and young adults. For engagement purposes, reminders keep the participant connected to the program, on track, informed with NRT shipment notifications and adhering to behavioral regimens between calls. Texting also promotes self-activation, where the participant gets to be actively involved in their quit.

Web-Based Services

Recommendation 1: All Quitlines should offer at least one or more interactive and/or tailored Web-based service for the purpose of providing an intervention by June 30, 2022.

Level of evidence: Offering a Web-based intervention that is interactive and tailored is a research-validated best practice.

Notes and Suggestions: This recommendation can be implemented using Web-based services developed by Quitline service providers or external vendors.

Recommendation 2: All Quitlines should offer at least one or more interactive and tailored Web-based service for the purposes of improving outreach, enrollment, and/or engagement by June 30, 2023.

Level of evidence: Offering interactive and tailored Web-based programs for the purpose of outreach, enrollment, or engagement is a promising practice.

Notes and Suggestions: Although presently there is not aggregated Quitline data on Web services for outreach, enrollment, and engagement, we learned these applications are underway through practical application. Regarding outreach, service providers are expanding marketing campaigns and reaching more diverse audiences who appreciate a having a variety of choices that meet their unique learning needs (e.g., interactive education through rich media like video, audio, quizzes, libraries, trackers, etc.). By offering online enrollment options participants get to choose their communication preferences. This has the potential to reach younger tobacco users who prefer not to call. Providing real-time chat features and online community forums offers timely answers to questions or more clinical content to build motivation, confidence, and engagement.

Not Recommended at this Time

Currently there is insufficient evidence in the literature and Quitline practice for recommendations on the following:

- Offering text messaging or Web-based programs in the Quitline setting for the purpose of promoting or reminding about upcoming evaluations
- Utilizing Apps for any purpose in the Quitline setting

NAQC will monitor the literature and update the Quitline community as new evidence becomes available.

Supporting Evidence and Rationale for the Recommendations

Table 1 provides detailed research to support NAQC's technology-mediated services recommendations. Current adoption by Quitlines of the type of service is also included when available. Whereas use of technology by Quitlines is emerging, much of the research on technology-mediated services is drawn from health delivery settings external to Quitlines in which no other cessation services or only minimal support is offered.

Table 1 is designed to be a quick, 'at a glance' summary that guides the reader through the rationale for recommendations. You will find that it starts off with everything on texting, Web and App services and includes brief summaries of research findings found to be most applicable to using those technologies in Quitline settings.

The categories not only consist of the type of service and percentage of adoption among Quitlines but also demonstrate the various purposes these technologies are being used for in addition to interventions, such as outreach, enrollment, engagement, and evaluation. While they do not have the highest levels of evidence associated with them like you see with interventions, we chose to include them even though they are not part of a randomized clinical trial.

Table 1: Quitline Technology-mediated Services: Type, Purpose, Adoption and Research Findings

Texting Service by Purpose and Adoption	Research Findings
Text	Overall, research findings show strong evidence that interactive and/or tailored text-message-based interventions improve smoking cessation rates when delivered on their own or as an adjunct to other treatments. Text messaging may also be effective for outreach, enrollment, and engagement purposes. Based on practice in a Quitline environment, texting as an interactive and/or tailored intervention is effective as a stand-alone service or as an adjunct to telephone service. In practice settings, quitlines have used texting for the purposes of outreach, enrollment, intervention, engagement, and promoting evaluations.
Text: Outreach No Annual Survey data is available	A study by Naughton et. al., (2014), included in the 2017 Cochrane Review (Taylor et. al., 2017) has outreach components and assessed the short-term effectiveness of tailored web and text-based facilitation of smoking cessation in primary care. While no evidence of a short-term benefit, longer-term abstinence at 6 months was statistically higher among participants receiving tailored print and short message service (SMS) text message self-help delivered as an adjunct to cessation support in primary care. Findings showed this support was acceptable to most participants and was feasible to deliver within the context of a primary care consultation. Knowing this, Quitlines may strategically partner with primary care providers to enhance referrals to a Quitline and expand their reach. The 2017 Cochrane Review (Taylor et. al., 2017) also included Marcano Belisario et. al., (2017) who studied Interventions for recruiting smokers into cessation programs, as part of outreach. Their tailored text messaging attempts to recruit were more effective than generic reminders. Also, adding a text message reminder or real quotes from participants to a personal phone call improved the recruitment of participants. Findings suggest elements to improve recruitment of smokers into cessation programs to include personal tailored interventions, recruitment methods proactive in nature, and more intensive recruitment strategies. Abroms et. al., (2017) contributed to the 2019 Cochrane Review (Whittaker et. al., 2019) and studied automated text messaging as an outreach tool to increase the reach of smoking cessation treatment. Investigating the effects of outreach on rates of opting in and successful treatment delivery, outreach text messages were found to have moderately high uptake, with most participants opting into their tobacco treatment program and younger and female participants more likely to opt-in. The majority found it helpful for quitting smoking and would recommend the program to a friend. One of the text interventions was aimed at connecting smokers to Quitline phone counseling via text message and the other was aimed at connecting smokers to a smoking cessation text messaging program. Most participants across both groups replied to at least one message. Amato et. al., (2020) studied the integration of digital behavior change interventions within an EHR system. Quitlines able to leverage EHRs to identify at-risk patients and increase the reach of digital interventions through proactive electronic outreach provides a novel approach that may increase the numbers of individuals who engage with evidence-based treatment.

	Krebs et. al., (2020) examined the feasibility and effectiveness of Text2Connect that uses text messages to offer proactive connection to the New York State Smokers Quitline and had notable response rates. This directly relates to the value of using texting in Quitline environments as a form of promotional outreach.
Text: Enrollment No Annual Survey data is available	As part of the 2019 Cochrane Review (Whittaker et. al., 2019), Abroms et. al., (2017) recognized the need for innovation in both the enrollment of pregnant smokers in smoking cessation treatment programs and the types of treatment offered. They capitalized on pregnant women already enrolled in a health text messaging program and investigated whether an interactive and intensive text message program called Quit4baby can promote smoking cessation for pregnant women. Recruitment text messages were sent to Text4baby subscribers. Results provide limited support of the efficacy of the Quit4baby text messaging program in the short term and late in pregnancy, but not in the postpartum period. Christofferson et. al., (2021) investigated a smoking cessation mobile health program called SmokefreeVET in a real-world veterans' health care setting and helped enroll a different segment of their smoking population, which was female and younger than they typically enroll. Nearly half of them combined the use of the text program with smoking cessation medication and the majority went on to complete a full six weeks of the program. These interventions have implications for Quitlines who also serve similar priority populations and are trying to reach and enroll younger populations, including female veterans who demonstrated a preference for texting to telephone services.
Text: Intervention 84.6% of Quitlines offer interactive text-messaging (2020 Annual Survey)	The 2019 Cochrane Review (Whittaker et. al., 2019) found moderate certainty evidence that interactive and/or tailored text messaging interventions are more effective than minimal smoking cessation support. Interactive and/or tailored text messaging added to other smoking cessation interventions also appeared more effective than the other smoking cessation interventions alone. Also in this review, Bock et. al. (2013) examined the efficacy of a tailored texting smoking cessation intervention program based on an individual's stage of readiness and learned that text-based interventions can be successfully implemented with a diverse group of adult smokers at unique stages of readiness. Cobos-Campos et. al, (2017) conducted a randomized trial researching the effectiveness of text messaging as an adjuvant to health advice in smoking cessation programs in primary care. They concluded the combined program was effective for smoking cessation and it was included in the 2019 Cochrane Review (Whittaker et. al., 2019). Similarly, Vidrine et. al. (2019) learned not only that text messaging needs to be tailored, but that most likely it must be paired with phone counseling to increase effectiveness. The Surgeon General findings reveal evidence is sufficient to infer that short message service (SMS) about cessation are independently effective in increasing smoking cessation, particularly if they are interactive or tailored to individual text responses. In a Quitline environment, smokers who are already seeking assistance through the phone may be willing to extend their care to also include texting, especially if services remain personalized and interactive. Smokers not willing to make a call may be willing to text instead. The Community Preventative Services Task Force (CPSTF) recommends mobile phone text messaging interventions for tobacco smoking cessation to increase the number of adults who successfully quit. Evidence shows a meaningful increase in the number of adults who successfully quit smoking, six or

	more months following intervention (Whittaker et. al., 2019) This finding applies to a range of intervention characteristics that include text messaging either being implemented alone or with other interventions including counseling, web-based materials or email messages, nicotine replacement therapy, printed materials, or a mobile phone App. Scott-Sheldon et. al., (2016) provided a meta-analysis demonstrating support for the efficacy of text messaging interventions. Most text-messaging interventions were targeted to the sample and tailored to the recipient (i.e., quit date). They often provided personalized feedback on smoking behaviors, encouraged participants to set quit goals or make plans to reduce smoking, addressed self-efficacy goals and provided self-management skills training. Participants were often encouraged to use social support and recommended pharmacological interventions to aid in their smoking cessation. These meta-analytic reviews offer guidance for Quitline text-messaging interventions to explore for whom and under what circumstances text-messaging interventions are optimized based on the duration of effects. Research also exists around using text messaging as a post-intervention supplement. Armanasco et. al. (2017) meta-analysis studied the impact of text messaging being used to maintain behavior change after an intervention ends. This provides preliminary evidence that small, sustained intervention effects are possible, which has implications for Quitlines providing services around relapse prevention. Boal et. al., (2016) examined the role of text messaging in combination with comprehensive Quitline services including multi-call phone counseling, access to an interactive website, and nicotine replacement therapy. Similar rates of 7-day abstinence were reported regardless of whether participants received combined multi-call Quitline services plus text messaging or multi-call Quitline services in isolation. These results are helpful to understand the impact of combining Quitline and text messaging services on smoking outcomes. Spears et. al. (2019) recognized the importance of including populations of concern when designing interventions and created a text message intervention for low SES African American smokers. They learned text messages should be personalized, interactive, provide strategies for coping with cravings and recovering from smoking lapses, involve relatively short to the point messages and include pictures. Mays et. al., (2021) provided an example of an effective tailored mobile messaging intervention for Waterpipe Tobacco Cessation in young adults that resulted in higher 6-month cessation rates. These learnings are beneficial for Quitlines to incorporate into their existing efforts to personalize messages uniquely to groups more challenging to reach, like young adults.
<u>Text:</u> Engagement No annual survey data is available	Graham (2016) optimized text messaging through the aspects of personalization, integration, dynamic tailoring, and message intensity to improve adherence to web-based smoking cessation treatment. This highlights key components that can be helpful to consider when trying to strengthen engagement with web-based services using texting. Regarding targeting youth for engagement in text messaging, Graham et. al., (2020) determined that young people can be easily engaged in accessible, anonymous, digital, platforms like text messaging, promoted through social media to quit E-cigarettes. Graham et. al., (2021) also completed a randomized controlled trial and found that Web services alone were just as effective for abstinence rates as a combined Internet and text message intervention for smoking cessation among adult current

	smokers in the U.S. There also was evidence of higher levels of intervention engagement and satisfaction at 3 months among the combined group.
Text: Evaluation	While the research was not identified around texting used for evaluation purposes, service providers report using text messaging as reminders to complete 7-month surveys (Practice Brief, 2020).
Web Service by Purpose and Adoption	**Research Findings**
Web	Overall, research findings show strong evidence that Web services are effective in providing interactive and tailored interventions. Some research evidence exists that Web-services are effective for providing enrollment, engagement, and outreach. Based on practice in a Quitline environment, Web services as an interactive or tailored intervention are effective as a stand-alone service or as an adjunct to telephone services. In practice settings, Quitlines have used Web-based services with good results, for the purpose of outreach, enrollment, intervention, engagement and as reminders to encourage participants to complete evaluations or obtain real-time feedback.
Web: Outreach No annual survey data is available	The National Cancer Institutes' (NCI's) experience with the Smokefree.gov initiative suggests that offering different, complementary technology options to meet the needs and preferences of smokers has the potential to meaningfully expand the reach of cessation treatment. In addition to digital resources directed at the general population, the Smokefree.gov initiative includes population-specific resources targeted at adolescents, women, military veterans, Spanish speakers, older adults, and other populations. Meeting smokers on their preferred platforms and providing multiple, asynchronous opportunities for content engagement may enable Quitlines to reach and engage millions of additional smokers each year and accelerate the rates of smoking cessation. (Prutzman et. al., 2021)
Web: Enrollment 92% of Quitlines offer web enrollment (2020 Annual Survey). Of these, the percentage registering by web ranged from 1% to 80%.	Most Quitlines are offering web enrollment options currently. Data from NAQC's Annual Survey of Quitlines shows 44 States reported having Web-based enrollment (2020). Conversion from entry to a Web enrollment page to registration (26% vs. 25%), was very similar to the conversion rate through telephone contact (2019). This supports the rationale for Quitlines to continue to provide online options around enrollment. Keller et. al., (2020) researched changing promotional Quitline services by offering service choices, ensuring tobacco users could register for all services either online or by telephone, and utilizing nonjudgmental media campaigns. These innovations increased treatment reach and the estimated number of participants who quit smoking. Keller, et. al., (2021) researched differences between online and telephone enrollments in Quitline participant characteristics and found online Quitline enrollment engages younger tobacco users and may be particularly appropriate for non-telephone Quitline services. This supports Quitlines' interest to add an online enrollment to their Web-based services. Additionally, Quitlines should be aware of the need to continue to monitor who is accessing online services. Webb Hooper, et. al., (2019) determined that digital inequalities exist in Web-based tobacco cessation services. Compared with Whites, African Americans, Hispanics, American Indian/Alaskan Natives, and others were less likely to enter the Quitline via the Web and enroll in a Web-only program.

Web: Intervention Quitlines offer Web-based self-help (94.2%), chat rooms (80.8%), interactive counseling (94.2%) (2020 Annual Survey)	The evidence from trials with adults from the 2017 Cochrane Review (Taylor et. al., 2017) suggests that interactive and tailored Internet-based interventions with or without additional behavioral support are moderately more effective than usual care or self-help at six months or longer. Still, there was no evidence that these interventions were better than other active smoking treatments. Treatment effectiveness in younger people is unknown. Balmford et. al. (2013) contributed to the 2019 Cochrane Review (Whittaker et. al., 2019) and investigated the uptake of automated tailored interventions for smoking cessation comparing a Web-based system, text messaging program, both as an integrated package and the choice of either or both, with the highest overall intervention uptake occurring in the choice condition. They learned that a Web-based intervention is most attractive if the offer to use is made by web, whereas a phone-based intervention is more likely to be used if the offer is made by phone. Providing automated interventions on multiple platforms allows for maximal choice and the greatest overall use of some form of help. Siemer et. al., (2020) researched the user experience of a blended face to face and Web based smoking cessation intervention. They learned that face to face sessions compensated for the weakness of the web-sessions but not vice versa. Therefore, knowing that web sessions were supported by the strengths of a face-to-face session could be useful to entice participants entering solely through text, to consider enhancing their experience through face-to-face services. The Surgeon General's Report indicates the evidence is sufficient to infer that Web or Internet-based interventions increase smoking cessation and can be more effective when they contain behavior change techniques and interactive components (US Department of Health, 2020). The Community Preventative Services Task Force (CPSTF) recommends Internet-based interventions to increase tobacco use cessation as evidence shows interventions increase cessation among adults interested in quitting when measured six or more months following the intervention. Interventions must have at least one type of interactive feature to help clients monitor progress and provide feedback, tailored guidance that matches users with services and advice, and coaching, counseling, or social support from peers or trained professionals. Content may also be developed or adapted to specific populations and incorporate text messaging, phone calls, or medications. An example of their cited research includes Graham et. al. (2016) who compared internet-based interventions to other broad reach cessation approaches and concluded they were more effective and had effects equivalent to those of telephone and phone counseling. Bricker et. al., (2018) investigated a full-scale randomized trial comparing Web-delivered interventions for smoking cessation and improving quit rates. He found WebQuit.org and Smokefree.gov had similar 30-day point prevalence abstinence rates at 12 months that were higher than those of prior published website-delivered interventions and telephone counselor-delivered interventions. These Web-delivered interventions were evaluated for their clinical approach and included long-term follow-up.
Web: Engagement Web-based services (79%)	Perski, et. al., (2021) presents a case study of WebQuit, a smoking cessation website grounded in Acceptance and Commitment Therapy which is based on psychological flexibility and embracing thoughts and feelings in a nonjudgmental way. Their research identified content-based engagement patterns and their associations with user characteristics and cessation outcomes. WebQuit users were categorized into disengagers, tryers, and committers to provide a greater understanding of how unique categories of users engage with web interventions over time. Committers saw increases in a key mechanism of action and greater odds of quit success.

(2020 Annual Survey)	
Web: Evaluation	While the research was not identified around Web-based services used for evaluation purposes, service providers report using the Web to obtain real-time feedback (Practice Brief, 2020)
App Service by Purpose and Adoption	**Research Findings**
App	Overall, when compared to minimal non-App smoking cessation support or less intensive App support, research findings are limited. Cochrane Reviews do not provide favorable evidence that Apps may be effective for intervention purposes. More recent research is demonstrating some support for comparing Apps to standard clinical practice or Apps following Acceptance and Commitment Therapy treatment frameworks. One article investigates privacy standards around Apps. More research is needed to understand how Apps are utilized for outreach, enrollment, intervention, engagement, and evaluation. In the Quitline environment App services are not being consistently utilized, but among the few service providers that do, they are beginning to investigate how Apps can be most effective in these real-world settings. According to the 2019 Cochrane Review (Whittaker et. al., 2019), benefits of Apps include interventions with ease of use and access at any time, cost-effective delivery, scalability to large populations, the ability to tailor messages to key user characteristics and link the user with social support and other tobacco control programs.
App: Intervention Mobile App (1.9%) (2020)	The 2019 Cochrane Review (Whittaker et. al., 2019). shows the evidence is inadequate to determine whether Apps are useful for quitting smoking when compared to no cessation intervention or minimal interventions. Five studies tested the effectiveness of smoking cessation smartphone Apps alone and varied considerably in intervention content and components. There was no evidence of a favorable effect of smartphone Apps with minimal-non-App smoking cessation support (e.g., a printed self-help guide and encouragement to access available smoking cessation services). There was also no clear evidence of an increase in quit rates because of smartphone smoking cessation Apps when compared to smoking cessation support of lower intensity (i.e., less intensive App) support that included an App that provided only basic information. There is insufficient evidence with which to evaluate the effect of mobile App interventions, but there are many ongoing studies, so evidence on these interventions will continue to evolve. The Surgeon General's Smoking Cessation Report 2020 indicates the evidence is inadequate to infer that smartphone apps for smoking cessation are independently effective in increasing smoking cessation (US Department of Health, 2020) Palleja-Millan, et. al., (2020) also recognized the limited number of scientifically validated Apps and evaluated the efficacy of a gamified mobile App to increase the success rate of smoking cessation interventions in adults. They discovered through an intervention trial that regular use of an App for smoking cessation is effective in comparison with standard clinical practice, such as general health advice. Their mobile App usage included interventions such as social compromise and strategies to cope with abstinence syndrome and moments of craving. They reinforced the importance of users having a minimum level of digital skills on which to use the Apps and that they are motivated to use them. They also encouraged researchers to consider how to personalize the intervention and available

	features to maximize engagement. Patterns of participation and follow-up over time demonstrated encouraging rates of tobacco cessation. Bricker et. al, (2020) completed a research trial that provides evidence that, compared with a National Cancer Institute Smoking Cessation App based on the US Clinical Practice Guidelines, an Acceptance and Commitment Therapy-based smartphone App was more efficacious for quitting cigarette smoking and thus can be an impactful treatment option. The main comparison of these applications was teaching acceptance versus avoidance of smoking triggers. It involved teaching skills that allow urges to pass versus avoidance of urges. This study advances the evidence-base for smartphone Apps for smoking cessation. Huckvale et. al., (2019) assessed the data sharing and privacy practices of smartphone Apps for depression and smoking cessation. Among their findings, they learned, "Twenty-five of 36 apps (69%) incorporated a privacy policy. Twenty-two of 25 apps with a policy (88%) provided information about primary uses of collected data, while only 16 (64%) described secondary uses. While 23 of 25 apps with a privacy policy (92%) stated in a policy that data would be transmitted to a third party, transmission was detected in 33 of all 36 apps (92%)". This information could be useful for Quitlines to know when exploring privacy standards of practice around the use of Apps. Rathbone et. al, (2017) combined the use of Mobile Apps and SMS messaging as physical and mental health interventions in a systematic review and discovered Apps proved to be more effective when used as an intervention for stress, anxiety, and depression. Results also showed Apps to have a more significant effect on medication adherence, while psycho-educational information was understood more when read in SMS form. This has relevance in Quitline environments when integrating services to consider pairing text messages for motivation and support while using an App to promote medication adherence.

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