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Connecting low-income smokers to tobacco treatment services

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HIGHLIGHTS

- We designed two strategies for connecting low-income smokers to quitline services.
- Strategies were direct mail and opportunistic referral; both employed incentives.
- Each strategy reached individuals at differential levels of readiness to quit.
- Smoking abstinence rates at follow-up indicated both strategies had high impact.
- Both strategies had strengths, and both can be used in population-based practice.

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ABSTRACT

The Affordable Care Act calls for using population-level incentive-based interventions, and cigarette smoking is one of the most significant health behaviors driving costs and adverse health in low-income populations. Telehealth offers an opportunity to facilitate delivery of evidence-based smoking cessation services as well as incentive-based interventions to low-income populations. However, research is needed on effective strategies for linking smokers to services, how to couple financial incentives with telehealth, and on how to scale this to population-level practice. The current paper evaluates primary implementation and follow-up results of two strategies for connecting low-income, predominantly female smokers to a telephone tobacco quitline (QL). The population-based program consisted of participant-initiated phone contact and two recruitment strategies: (1) direct mail (DM) and (2) opportunistic telephone referrals with connection (ORC). Both strategies offered financial incentives for being connected to the QL, and all QL connections were made by trained patient navigators through a central call center. QL connections occurred for 97% of DM callers (N = 870) and 33% of ORC callers (N = 4550). Self-reported continuous smoking abstinence (i.e., 30 smoke-free days at seven-month follow-up) was 20% for the DM group and 16% for ORC. These differences between intervention groups remained in ordered logistic regressions adjusting for smoking history and demographic characteristics. Each recruitment strategy had distinct advantages; both successfully connected low-income smokers to cessation services and encouraged quit attempts and continuous smoking abstinence. Future research and population-based programs can utilize financial incentives and both recruitment strategies, building on their relative strengths.

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1. Introduction

Smoking prevalence among U.S. adults is 17% for those who live at or above the poverty level but 28% for those below it (Centers for Disease Control and Prevention, 2014), underscoring how income underlies disparities in cigarette smoking and smoking-related health problems (Jha et al., 2006; Thomas et al., 2008). High smoking rates persist among low-income women (Stewart et al., 2010), and smoking can account for up to half of mortality disparities associated with socioeconomic status among males (Jha et al., 2006). Financial incentives are known to successfully promote smoking cessation, especially in low-income populations (Blumenthal et al., 2013; Bryant et al., 2011; Volpp et al., 2009; Sigmon & Patrick, 2012), yet a dearth of research exists on how such evidence-based interventions translate to population-level practice (Ammerman, Smith, & Calancie, 2014; Spoth et al., 2013; Lewis, 2010). Subsequently, a more translatable evidence base consisting of practice-based evaluations and not necessarily randomized trials of population-level interventions is needed (Green, 2008; Sanson-Fisher, Bonevski, Green & D'Este, 2007; Ammerman et al., 2014). Such evidence is critical for addressing public health priorities exemplified by the

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Affordable Care Act such as scaling up incentive-based interventions in order to promote smoking cessation in low-income populations (Blumenthal et al., 2013: 497–498; Kassler, Tomoyasu, & Conway, 2015).

Telehealth has potential for effectively delivering cessation services to large numbers in underserved populations (Bashshur et al., 2014; Wootton et al., 2005; Wootton, 2012). As a primary example, free state telephone tobacco quitlines (QLs) offer an evidence-based and population-level approach to increasing smoking abstinence rates (Stead et al., 2007; Fiore et al., 2008), and low-income and non-White populations are inclined to use free QLs (Burns et al., 2011; Zhu et al., 2011). However, QL utilization rates are markedly low across the U.S., with a state-level average of approximately 2% (Zhu et al., 2012).

Consequently, more research is needed on strategies that successfully extend the reach of QLs, particularly to low-income populations (Zhu et al., 2012). Specifically, QL research is needed that (1) incorporates financial incentives, (2) targets individuals at various stages of motivation for quitting, and (3) focuses on "reactive" recruitment rather than "proactive" approaches (Stead et al., 2013; Asfar et al., 2011; Mathew et al., 2014). Few published QL interventions have utilized financial incentives (Stead et al., 2013), and more interventions need to reach adults not motivated to quit (Asfar et al., 2011). Although proactive telephone-based cessation interventions (i.e., calls initiated by counselors [Lichtenstein et al., 1996]) have been effective in low-income populations (e.g., Solomon et al., 2005), less is known about reactive strategies (i.e., cessation counseling provided on demand).

Proactive QL recruitment is designed to contact potential participants directly with QL operators in order to connect smokers directly to the QL at time of initial contact. Proactive strategies may potentially discourage participation of individuals who are not ready to take immediate and direct behavioral steps towards quitting. A reactive strategy is designed to refer potential users to a QL, with the expectation that individuals who are willing to participate will contact the QL at an appropriate time for them after receipt of referral. Reactive strategies are important because they have potential to recruit those who are ready to take action-oriented steps towards quitting, and it gives individuals time to contemplate possible steps towards quitting without immediate pressure. Reactive strategies can also encourage indirect pathways to behavior change via naturally occurring psychosocial mechanisms within the environment that individuals receive their initial referral to the QL (see e.g., Parks et al., 2015).

1.1. The current study

We report primary implementation and follow-up results from a population-based program that utilized financial incentives and two strategies designed to connect low-income smokers to Minnesota's QL, among a low-income sample primarily comprised of females. Mirroring patterns across the U.S., QL reach and utilization rates are low in Minnesota (see Patten et al., 2011). Following seminal research in implementation science (e.g., Fixsen et al., 2005; Glasgow, Vogt, & Boles, 1999), we examine participant responsiveness and retention as well as program fidelity measured via response rates and QL connection rates. We also examine primary follow-up and effectiveness outcomes measured as smoking status at time of follow-up with a focus on smoking abstinence rates. We examine these outcomes for two recruitment strategies separately, providing a basis for comparative effectiveness. Since direct mail is a cost-effective, population-level strategy for connecting individuals to preventive and telehealth services (Slater et al., 2005; Soet & Basch, 1997), one recruitment strategy was direct mail. The second was a centralized patient navigation system. Both strategies relied on individual-initiated phone contact (see Soet & Basch, 1997) and offered financial incentives to low-income smokers for being connected to the QL via three-way phone calls conducted by trained patient navigators (see Methods section for details).

2. Methods

2.1. Participants and intervention

2.1.1. Overview and setting

From September 2010 to September 2012, the program was implemented through "Sage Programs": Sage, Minnesota's National Breast and Cervical Cancer Early Detection Program (NBCCEDP) and Sage Scopes, Minnesota's Colorectal Cancer Control Program (CRCCPs) at the Minnesota Department of Health (see Lee et al., 2014; Slater et al., 2005). The recruitment timeframe was contingent on funding; consequently, funding and recruitment ended concurrently. Sage provides free breast and cervical cancer screening services to inadequately insured women 40 years of age or older, with household incomes at or below 250% of the US federal poverty level. Sage Scopes provides free colorectal cancer screening to a much more limited number of men and women ages 50 and older but who otherwise meet the same eligibility criteria as Sage. Unique among NBCCEDPs and CRCCPs, Sage Programs (hereafter referred to as Sage) has a single call center staffed by "patient navigators" (see Freund et al., 2008) trained in motivational interviewing (see Rollnick, Miller, & Butler, 2008). More than 22% of Sage participants smoke cigarettes. Since NBCCEDPs target low-income females, as previously noted, the current program focuses on a sample that is disproportionately female.

2.1.2. Intervention

The current program offered a $20 incentive to callers for being connected to Minnesota's QL via a three-way call conducted by Sage patient navigators. Two recruitment strategies were used: (1) direct mail (DM) and (2) opportunistic referral with connection (ORC) through the Sage Call Center call transfer system.

DM was designed to prompt cigarette smokers to call Sage's toll-free phone number rather than serve an educational function. Mailers consisted of a folded card with emotionally evocative messages and graphics as well as a small insert card advertising the financial incentive offer. We employed a loss-framed message (see Rothman & Salovey, 1997) coupled with a high-efficacy message (see Witte & Allen, 2000). These DM designs are based on health communication and health behavior theory. Specifically, the fear appeal message or loss-frame message is designed to inform an individual that a certain behavior will lead to an undesirable outcome, such as long-term smoking leading to physical disability or mortality (see Rothman and Salovey, 1997). Health communication research shows that these health messages based on fear appeal coupled with a clear articulation of *achievable* behavioral steps (i.e., high-efficacy message) produce the greatest behavior change (Rothman and Salovey, 1997; Witte and Allen, 2000; Slater et al., 2005). Theory suggests that responses to such health messages can be either a "danger control action" or a "defensive response." Danger control actions are actions taken when individuals feel (1) susceptible to a health problem and (2) capable of completing behavioral steps necessary for reducing the risk of the presented health problem. Defensive responses are actions antithetical to the proposed behavior change (i.e., behavioral steps *away* from the protective response) that are based on feelings of high fear in addition to low self-efficacy (for a more thorough discussion see Witte et al., 2001). The purpose of the design was to promote risk susceptibility associated with cigarette smoking in addition to offering clear and achievable steps for action. An example of a mailer is presented in Fig. 1. Following past research, two rounds of mailings were employed (Slater et al., 2005).

The incentive offer was presented via a small inserted card affixed to the inside of the mailer. This inserted card read: "Special offer: Call today and we'll pay you $20 plus give you the free tools to quit smoking," and it included Sage's toll-free phone number with a tracking promotion code that patient navigators recorded during calls. The presentation of the incentive offer within the mailer was intended to influence the decisional balance by reducing perceived barriers, providing