



Leveraging technology to promote smoking cessation in urban and rural primary care medical offices



Martin C. Mahoney^{a,*}, Deborah O. Erwin^b, Annamaria Masucci Twarozek^c,
Frances G. Saad-Harfouche^b, Elisa M. Rodriguez^b, Xiaoxi Sun^d, Willie Underwood^e, Chester Fox^f

^a Department of Medicine, Department of Health Behavior, Roswell Park Comprehensive Cancer Center, Buffalo, New York, USA

^b Department of Cancer Prevention and Control, Roswell Park Comprehensive Cancer Center, Buffalo, New York, USA

^c Department of Health Behavior, Roswell Park Comprehensive Cancer Center, Buffalo, New York, USA

^d State University of New York at Buffalo, Department of Biostatistics, Buffalo, New York, USA

^e Department of Urology, Roswell Park Comprehensive Cancer Center, Buffalo, New York, USA

^f State University of New York at Buffalo, Department of Family Medicine, Buffalo, New York, USA

ARTICLE INFO

Keywords:

Adults
Smoking cessation
Telemedicine

ABSTRACT

We examined the use of automated voice recognition (AVR) messages targeting smokers from primary care practices located in underserved urban and rural communities to promote smoking cessation. We partnered with urban and rural primary care medical offices ($n = 7$) interested in offering this service to patients. Current smokers, 18 years and older, who had completed an office visit within the previous 12 months, from these sites were used to create a smoker's registry. Smokers were recruited within an eight county region of western New York State between June 2012 and August 2013. Participants were contacted over six month intervals using the AVR system. Among 5812 smokers accrued 1899 (32%) were reached through the AVR system and 55% ($n = 1049$) continued to receive calls. Smokers with race other than white or African American were less likely to be reached (OR = 0.71, 0.57–0.90), while smokers ages 40 and over were more likely to be reached. Females (OR = 0.78, 0.65–0.95) and persons over age 40 years were less likely to opt out, while rural smokers were more likely to opt out (OR = 3.84, 3.01–4.90). Among those receiving AVR calls, 30% reported smoke free (self-reported abstinence over a 24 h period) at last contact; smokers from rural areas were more likely to report being smoke free (OR = 1.41, 1.01–1.97). An AVR-based smoking cessation intervention provided added value beyond typical tobacco cessation efforts available in these primary care offices. This intervention required no additional clinical staff time and served to satisfy a component of patient center medical home requirements for practices.

1. Introduction

Tobacco use remains as the leading cause of preventable death in the United States (US) and is responsible for > 480,000 deaths per year and over \$300 billion in healthcare expenses and productivity losses annually (Jamal et al., 2015; NYS Department of Health, 2014). Smoking prevalence has declined in the US with 15.5% of adults age 18 or older currently smoking cigarettes in 2016, compared to 20.9% in 2005, and likely reflects the impact of comprehensive tobacco control policies such as taxation, smoke-free legislation, mass media campaigns and expanded access to tobacco cessation counseling and medications (Jamal et al., 2018).

Rates of cigarette smoking are higher among males (17.5%) compared to females (13.5%), among persons with lower levels of education (40.5% with GED compared to 4.5% with a graduate degree),

among persons living below the poverty level (25.3% compared to 14.3% above poverty level), among adults with a disability/limitation (21.2% compared to 14.4% with no disability/limitation), and among adults with serious psychological distress (35.8% compared to 14.7% without serious psychological distress) (Jamal et al., 2018). Moreover, low socioeconomic status (SES) is associated with poorer health outcomes and disparities in smoking rates appear to be a significant contributor to this (Cokkinides et al., 2008).

Automated voice response (AVR), also referred to as interactive voice response systems (IVR) are increasingly common in business settings and their use has been extended to facilitate management of chronic health conditions (Finkelstein and Friedman, 2000). AVR systems include the use of computer software combined with an automated telephone system where patients are called at specified times and intervals, and a human voice asks questions and/or delivers instructions

* Corresponding author at: Roswell Park Comprehensive Cancer Center, Elm & Carlton Streets, Buffalo, New York 14263, USA.
E-mail address: Martin.Mahoney@RoswellPark.org (M.C. Mahoney).

while respondents provide short verbal responses and/or interact with the telephone keypad to provide responses. The use of AVR for smoking cessation has been studied at the Ottawa Heart Institute where quit rates of 44% were noted 6 months after discharge among 1276 cardiac patients identified as smoking and who were provided with counseling support, NRT and 3 AVR calls after discharge. However, that study relied on the provision of extensive resources including specification of smoking status following hospitalization, identification of smoking status on the patient chart, standard orders for NRT pharmacotherapies to support cessation and the use of dedicated personnel (counselor and administrative support), along with expenses related to the AVR system (Reid et al., 2006). The addition of AVR calls to identify potential relapse among recently quit smokers receiving standard quit line services did not increase rates of cessation (McDaniel et al., 2015).

Utilizing AVR technology to promote smoking cessation, as an adjunct to standard services available in primary care medical offices, has great potential to provide additional support to smokers. To date, AVR has had limited application in the primary care setting. An AVR system has been used to screen for tobacco use and then to provide that information to clinicians, however that study did not report on cessation outcomes (McDaniel et al., 2005).

This paper reports findings from a study examining the use of AVR technology to deliver smoking cessation messages to more effectively promote smoking cessation among smokers seen in diverse primary care/safety net settings.

2. Methods

2.1. Study design

This study utilized a cross-sectional design to deliver scripted messages encouraging cessation to smokers from selected primary care medical offices in urban and rural medical offices located in medically underserved communities. The research was approved by the Institutional Review Board.

2.2. Study population

The four urban and three rural primary care offices included federally qualified community health centers (FQHCs), academic sites and private practices, were located in medically underserved communities, and provided an electronic file of all smokers in their practice. This smokers registry included patients > 18 years old identified as tobacco users who had completed an office visit within the preceding 12 months (n = 5812).

2.3. AVR intervention

The AVR system attempted calls during predefined sessions (late morning, afternoon, early evening) on both weekdays (9 am to 8 pm) and weekends (10 am to 6 pm). If there was no answer, the date and time of call was recorded and another call was attempted after several hours; after 3 calls with “no answer” within 30 days, additional calls were deferred until the next month. If a “busy” signal was encountered, another call attempt was made in 15 min; after 3 busy signals in the same day, additional calls were deferred until the next day. For phone numbers which were invalid, incorrect or not in service, the data base was checked for alternative numbers, otherwise the outcome and date and time of call was recorded and no further calls to that number were attempted. If a “hang-up” was encountered, another call was attempted after 1 week; 2 “hang-ups” within a month resulted in deferring additional calls until the following month. For answered calls, the identity of the smoker was confirmed. If the smoker was not available we attempted to secure a call back time/date or an alternative number. The caller identification of AVR messages noted the smoker's primary care office and smokers were also given the option to “opt out” of further

AVR calls.

The “stages of change” model was applied to cigarette smoking as a strategy to classify smokers into one of several platforms leading to behavior change (Velicer et al., 1995). Stages of change plays an important role in smoking cessation, and stage-matched health messaging was considered when promoting and reinforcing cessation behaviors. The AVR system asked a brief series of items in order to classify a smoker into various groups with regard to their level of interest in quitting smoking: precontemplation (not thinking about stopping smoking), contemplation (thinking about quitting in the next 6 months), preparation (planning to quit in the next 30 days), action (committed to behavior change, sets a quit date, acquire pharmacotherapy and maintenance (a continued commitment to sustaining their smoke free behavior)).

If relapse occurred, the smoker was reassessed regarding their level of motivation for making another quit attempt. Respondents had the option of being transferred to either their primary care office or to the state smokers quit line for additional assistance with quitting. Although the AVR system did not permit tracking of these transfers, we estimate that this was uncommon based on feedback from the participating practices.

The content of these calls was consistent with accepted approaches for brief interventions delivered to smokers (Fiore et al., 2008): the precontemplation group was reminded that quitting smoking represents the single most important step to improve overall health and the availability of office/quit line resources, those in the contemplation group were messaged about the barriers to and benefits of quitting (e.g., costs of smoking, benefits of quitting) and evidence-based medications for cessation, those in the preparation group were encouraged to develop a plan for quitting (e.g., setting a quit date, acquiring pharmacotherapy, nicotine addiction, cues/triggers for smoking and motivation for quitting), those in the action group received messages regarding changing behaviors, identifying social support, and building self-efficacy and those self-identifying as “smoke-free” (maintenance group) were offered congratulations and encouraged to focus on the health benefits of continued cessation. In addition, this message content delivered within the stages of change model was modified based upon feedback from several focus groups of smokers, identified from underserved rural and urban community-based primary care medical offices, at which the content of potential messages and general approaches were discussed (Rodriguez et al., 2016). This formative research process assured that the cessation messaging was relevant to population of interest. AVR messages were finalized with clinical and research team input.

Following several weeks of AVR calls, it was noted that some smokers had received multiple call while others had no call attempts, and refinements were implemented to 1) limit the number of calls attempted during each week, 2) vary call times, based on both the time of day (e.g., late morning, afternoon, early evening) and day of the week (e.g., weekday versus weekend), and 3) randomize the starting point for each session of calls.

2.4. Independent variables

The smokers' registry included the following variables: medical office, patient sex, age, race, ethnicity, and name and phone number.

2.5. Dependent variables

The primary study outcome was self-reported smoking cessation based upon responses to the questions: “Since we last contacted you were you able to stop smoking for at least 24 hours?” and “How many cigarettes are you smoking per day now?” Successful quitters were defined as persons who reported quitting for at least 24 h and who responded “none/zero” to the item on amount currently smoked per day. Secondary outcomes included the number of call attempts and

Download English Version:

<https://daneshyari.com/en/article/8693434>

Download Persian Version:

<https://daneshyari.com/article/8693434>

[Daneshyari.com](https://daneshyari.com)