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ORIGINAL RESEARCH

Implementation evaluation of the Telephone Lifestyle Coaching (TLC) program: organizational factors associated with successful implementation

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Abstract

The Telephone Lifestyle Coaching (TLC) program provided telephone-based coaching for six lifestyle behaviors to 5321 Veterans at 24 Veterans Health Administration (VHA) medical facilities. The purpose of the study was to conduct an evaluation of the TLC program to identify factors associated with successful implementation. A mixed-methods study design was used. Quantitative measures of organizational readiness for implementation and facility complexity were used to purposively select a subset of facilities for in-depth evaluation. Context assessments were conducted using interview transcripts. The Consolidated Framework for Implementation Research (CFIR) was used to guide qualitative data collection and analysis. Factors most strongly correlated with referral rates included having a skilled implementation leader who used effective multi-component strategies to engage primary care clinicians as well as general clinic structures that supported implementation. Evaluation findings pointed to recommendations for local and national leaders to help anticipate and mitigate potential barriers to successful implementation.

Keywords

Mixed-methods, Veterans, Implementation, Telephone-coaching

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Implications

Practice: To successfully implement a telephone lifestyle coaching program, it is necessary to identify a skilled implementation leader who uses effective multi-component strategies to engage key stakeholders.

Policy: Funding for evidence-based telephone-based lifestyle coaching programs is necessary to expand access to individuals who are unable to participate in on-site programs.

Research: Research on the implementation of different types of interventions can forward implementation science by understanding what contextual factors may lead to implementation success under what circumstances.

Electronic supplementary material

The online version of this article (doi:10.1007/s13142-016-0424-6) contains supplementary material, which is available to authorized users.

Context is the loom that allows us to weave information into actionable knowledge…[1]

INTRODUCTION

Among adults, over half of all deaths, and many illnesses, can be attributed to four modifiable risk factors: physical inactivity, tobacco use, obesity, and alcohol use [2]. Preventing or delaying onset of disease by modifying these lifestyle factors is a priority objective for the Veterans Health Administration (VHA) due to the high prevalence of these risk factors among Veterans. For example, more than 70 % of VHA patients are overweight or obese (body mass index (BMI) ≥25 kg/m^2), which is a higher rate than the US general population [3]. Younger Veterans are at higher risk for developing chronic illnesses because they are more likely to be overweight/obese and smoke more heavily than non-Veterans [4–6].

The VHA has implemented an array of prevention programs that are widely available at the majority of VHA facilities, but enrollment and participation are low in currently existing on-site programs [7, 8]. Telephone-based coaching interventions may help increase participation by offering sessions at more convenient times and eliminating transportation barriers. Earlier studies identified a gap in delivery of phone-based self-management support in the VHA [9, 10]. Telephone lifestyle coaching is an effective alternative

to in-person programs in addressing a number of health behaviors, including diet, physical activity, weight loss and weight maintenance, tobacco cessation, stress management, and unhealthy alcohol use [11–17]. A recent synthesis of telephone-based interventions to increase physical activity and improve diet within a 3- to 6-month time period concluded that "the evidence is so strong […] that [Randomized Controlled Trial] designs (at least those comparing a telephone-delivered intervention to a no-treatment control) are no longer needed" [18, p. 86]. Dissemination of telephone-based lifestyle behavior interventions has been documented; among the most commonly cited challenges is successfully referring or attracting targeted individuals to appropriate programs [19–21]. Primary care clinics can be an important source of referrals for behavioral programs but there are challenges in realizing the full potential of this and other sources of referrals [22, 23].

The VHA recently completed a demonstration of the Telephone Lifestyle Coaching (TLC) program in 24 facilities. Over 9000 Veterans were referred to the TLC program, 57 % of whom completed at least one coaching session with a trained lifestyle coach over the phone. For the 57 % of enrolled Veterans who self-reported lifestyle behaviors 6 months after enrollment, 40 % quit smoking and 25 % lost more than 5 % of their baseline weight [24]. The aim of the current study was to identify facility-based contextual factors that influenced implementation of the TLC program to inform future scale-up and implementation.

METHOD

This was a sequential mixed-methods [25] evaluation design. Figure 1 lists the qualitative and quantitative sequence and data used. This evaluation was conducted as a research study and was approved by the Institutional Review Boards at the two research institutions with which the investigators are affiliated.

Setting

The VHA's National Center for Health Promotion and Disease Prevention (NCP) is the national field coordinating office charged with leading prevention initiatives within the VHA. The demonstration of the TLC program was one of the high priority goals articulated in the VHA 2010 national strategic plan and thus it had high-level leadership commitment with resource and technical supports. To standardize the TLC program across facilities, NCP conducted a competitive bidding process to identify an entity that could deliver a proven program to a national sample of several thousand Veterans; the bid included a requirement to document coaching sessions within the VHA's electronic health record. They chose Alere™ Wellbeing based on cost and quality of their programing across the six prevention topics, as well as the VHA's previous success with Alere Wellbeing's evidence-based Quit For Life® program [28, 29] in a VHA network.

TLC intervention

The TLC program provided telephone lifestyle coaching related to six topics: (1) Eat Wisely; (2) Be Physically Active; (3) Be Tobacco Free; (4) Strive for a Healthy Weight; (5) Manage Stress; and (6) Limit Alcohol. The program consisted of up to nine coaching calls, scheduled at the Veteran's convenience, over approximately 6 months.

Implementation strategy

NCP staff developed a multi-component implementation strategy to support the 24 facilities. Supplementary File 1 organizes these strategies based on a published taxonomy of implementation strategies [30]. The executive director of each facility was asked to sign a Memorandum of Understanding with NCP committing to the TLC program demonstration. Two implementation leaders were identified at each of the demonstration facilities, the majority of whom were already dedicated to health promotion and disease prevention as well as patient-centered coaching. Therefore, a relatively engaged group of clinicians was already in place at each of the TLC program demonstration facilities. The implementation leaders attended a 2-day kick-off orientation for the TLC program and led all implementation activities. NCP provided a wide array of resources online, e.g., communication materials, and hosted regular calls with the implementation leaders to support implementation efforts.

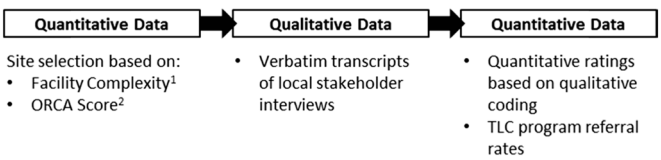

Fig 1 | Mixed-methods study design [1]Facility complexity was assessed based on size, academic affiliation, trauma center level, and service mix of the facility [26]. [2]Readiness for implementation was assessed using the Organizational Readiness to Change Assessment (ORCA) tool. The ORCA tool is comprised of three primary scales: Evidence, Context, and Facilitation [27]. An overall score for each site was computed by aggregating responses across all three scales

Evaluation methods

Quantitative measures for facility selection

A sample of 12 of the 24 demonstration facilities was selected for in-depth evaluation of the TLC program implementation. The purposive sample was selected to maximize variation with respect to tertiles of readiness for implementation [27] and facility complexity [26]. Readiness for implementation was assessed using the Organizational Readiness to Change Assessment (ORCA) tool, which is comprised of three scales: Evidence, Context, and Facilitation [27]. Scores were categorized into three groups: Missing, Low, and High. Facility complexity was assessed based on size, academic affiliation, trauma center level, and service mix of the facility [26]. Scores were categorized into two groups: Low and High (see Table 1). Two sites were selected from each of six categories (three ORCA categories by two Complexity categories) to maximize variation along these two measures. Stakeholders at these facilities were invited to participate in telephone interviews. Of these 12 facilities, 6 were selected for in-person interviews during facility visits; one from each of the six facility categories.

Qualitative stakeholder interviews

Two rounds of semi-structured interviews were conducted at each of the 12 evaluation facilities; the first round was 2 to 4 months after the TLC program launched and the second round was 4 to 5 months later in order to explore dynamic implementation processes. The TLC program implementation leaders and the MOVE!® program coordinator were first invited via e-mail to participate in a telephone interview. MOVE! program coordinators deliver the existing weight management program within VHA facilities. After these interviews were completed, visits were made to six of the facilities. During the facility visits, additional staff members involved with referring patients to the TLC program were interviewed. In addition, clinical leaders and computer application developers who helped with setting up the electronic health record system to support the TLC program referrals and documentation were interviewed. Interviews ranged from 30 to 60 min, were audio-recorded, and transcribed verbatim. Interviews were conducted with 102 individuals across the two waves of interviews. See Table 2.

Qualitative data collection and conceptual framework

The Consolidated Framework for Implementation Research (CFIR) [31] was used to develop the interview guide and guided qualitative coding and analysis. See Supplementary File 2. The CFIR provides a menu of 39 constructs across five domains (Intervention Characteristics, Inner Setting, Outer Setting, Characteristics of Individuals, and Process).

Qualitative data analysis

The CFIR provided the structure for the initial codebook to guide qualitative data coding using a descriptive content coding approach [10]. The coding approach was both deductive (codes were derived from CFIR constructs) and inductive (codes were derived from the data) [32]. During the coding and rating phases of analysis, the analysts were blinded to referral rates. Each transcript was independently coded by a revolving team of two analysts (C.R., N.S., J.F.). Codes were compared and differences were resolved by consensus discussion. QSR NVivo version 10 was used to facilitate coding.

Quantification of qualitative data

For each transcript, two analysts independently assigned ratings for each code to reflect its valence (positive or negative impact on implementation) and its strength of manifestation (weak or strong impact on implementation) [33]. Ratings ranged from −2 to +2; 0 reflected a neutral or mixed influence of the code and M reflected missing data. For each facility, individual interviews with their ratings were consolidated into case memos. Two analysts independently rated each code across all the interviews to obtain a facility rating at each time period. Cases memos also provided an opportunity to summarize data and write a rationale for each rating. This process was repeated for the two rounds of interviews. A final consolidated memo with

Table 1 | Distribution of demonstration facilities by ORCA score and facility complexity

ORCA score[b]	Facility complexity[a]		
	High	Low	Total
Missing	2	6	8
0–3.9	3	4	7
4.0–5.0	5	4	9
Total	10	14	24

[a] Facility complexity was assessed based on size, academic affiliation, trauma center level, and service mix of the facility [26]

[b] Readiness for implementation was assessed using the Organizational Readiness to Change Assessment (ORCA) tool. The ORCA tool is comprised of three primary scales: Evidence, Context, and Facilitation [27]. An overall score for each site was computed by aggregating responses across all three scales

Table 2 | Interviewee recruiting and participation by role

Role	Invited	Individuals interviewed
TLC program implementation leaders and other prevention program coordinators[a]	57	43
Clinical managers and administrators	30	21
Primary care providers	27	24
Nurse care managers	12	12
Other staff	2	2
Total	128	102[b]

[a] Included Health Promotion Disease Prevention managers (HPDP), health behavior coordinators (HBC) and MOVE! weight management program coordinators

[b] Most interviews were conducted with single individuals but a few were with a group of two to three individuals by request of the interviewees

data from both time periods was created. Ratings were again applied independently by two analysts that represented a consolidated assessment across all interviews and the two time periods for each facility. Disagreements were addressed through consensus discussions at every phase [10].

Quantitative measure of implementation success

Though over half of referred patients enrolled in TLC (57 % (5333) of the 9357 referred), 43 % (4024) failed to complete a single session: 6 % ($n=576$) declined, 2 % ($n=156$) were ineligible, and 35 % ($n=3304$) were unable to be contacted by TLC coaches despite multiple attempts [24]. The latter category may be attributable to organizational factors (e.g., outdated or inaccurate contact information recorded in the electronic health record) but investigating this was outside the scope of this study. Instead, this study focused on the implementation of processes necessary to refer targeted patients to TLC, which was delivered by a separate entity. Proctor et al. define measures of implementation outcomes that are distinct from patient-level outcomes typically assessed in intervention trials [34]. It is important to select an outcome that is measurable and proximal to the phenomenon of interest. The measure of implementation effectiveness in this study was therefore *penetration*, which was defined as the extent of integration of TLC referral processes into the clinical setting within participating VA facilities. The most robust and available measure of penetration was facility referral rate: the number of TLC referrals divided by the monthly average number of Veterans enrolled in primary care at each facility during the first 12 months of the TLC program demonstration (November 2011–October 2012).

Mixing qualitative and quantitative data

Framework analysis methods were used in the final phase of the analyses [35]. A matrix that listed facilities in columns and constructs in rows was created. Each cell contained ratings based on all interviews (interview-specific ratings and a global rating) and short summaries of qualitative data. At this point in the analyses, the analysts were un-blinded to facility referral rates, which were then added to the matrix.

Pearson correlations were computed using Stata version 11 and used to assess the strength of correlation between qualitatively derived construct ratings and referral rates across facilities. Constructs with statistically significant correlations ($p<.05$) with referral rates were deemed to "strongly" distinguish between facilities with low and high implementation success. Correlations values of $r\geq .50$, but with p values greater than .05 but less than .10 were deemed as "weakly" distinguishing between facilities with low and high implementation success.

RESULTS

Following the TLC program launch (the point at which facilities were able to start referring patients), it took an average of 2 months (range, 2–10) before facilities were able to refer at least ten Veterans in a given month. On average, 13 Veterans were referred to the TLC program per 1000 who were enrolled in primary care at the demonstration facilities. There was a more than 21-fold (range, 2–43) difference in referral rates in the last month of the demonstration across facilities.

Overall context

Before describing the constructs associated with implementation success, it is important to describe the overall context within which these findings were generated. In addition to the supports listed in Supplementary File 1, to which all facilities had comparable access, Supplementary File 3 lists constructs that did not distinguish between facilities, but that provide important details about the overall context for this evaluation. Challenges common to all facilities included the TLC program being introduced in the midst of a major transformation to the VHA's version of the patient-centered medical home (PCMH; http://www.va.gov/health/services/primarycare). This transformation as well as other factors led some facilities to experience significant challenges in referring patients to the TLC program, as reflected in the wide range of referral rates.

The following sections describe constructs that were correlated with referral rates and thus point to contextual features that appear to be predictive of implementation success. Figure 2 lists distinguishing constructs, their valence ratings, and their correlations with referral rates for each evaluation facility.

Constructs associated with implementation success

The presence of enthusiastic, capable TLC program *Implementation Leaders* was strongly correlated ($r = .65$; $p = .03$) with referral rates. Three of the four highest-referral facilities had at least two TLC program implementation leaders who were actively leading implementation efforts. In contrast, two of the four facilities with the lowest referral rates had vacancies (because of unfilled positions or longer-term leave) in their NCP-established prevention- and coaching-related positions.

In addition, effective strategies to engage *Key Stakeholders* (PCPs and other staff) were strongly correlated ($r = .66$; $p = .03$) with referral rates. These stakeholders were important because they were the main source of referrals to the TLC program. TLC program implementation leaders at the facilities with the highest referral rates recognized the need for ongoing, multifaceted communication and engagement strategies:

> *[I communicate about the TLC program] constantly. […] I do coaching with the PACT [Patient Aligned Care Team] teams…and I've thrown out ideas, like, "Let's put together a list of your hypertensives and let's call them, I'll model it in your huddle, and introduce the telephone lifestyle coaching to those patients and try to get those people to quit smoking; pull the hypertensives who smoke, offer them TLC." …and I always introduce it*

Facility	1	2	3	4	5	6	7	8	9	10	11	Pearson Correlation	
Referral Rate (Number of referrals per 1000 Veterans)	2.01	2.32	2.59	6.00	6.04	6.88	7.72	10.24	10.49	12.73	14.53	r	*p*
Intervention Characteristics Domain													
Evidence Strength & Quality	+1	+1	+1	0	M	+1	+1	+1	+1	+1	+1	0.1233	0.7344
Relative Advantage	+1	+2	+2	+2	+1	+2	+1	+2	+1	+1	+2	-0.0873	0.7986
Adaptability	0	+1	0	+1	0	0	0	+1	0	0	0	-0.1865	0.5829
Complexity	-1	M	-1	M	M	+2	+1	-1	+1	+1	-1	0.1772	0.6746
Design Quality & Packaging	0	+2	+2	+1	+1	+1	+1	+1	+2	+1	+1	-0.0562	0.8695
Outer Setting Domain													
Patient Needs & Resources	-1	+2	+2	+1	+1	-1	-1	+1	+2	-1	+2	0.0156	0.9637
External Policy & Incentives	M	+1	M	M	M	M	M	0	+1	0	+1	-0.2777	0.651
Inner Setting Domain													
Structural Characteristics	-2	-2	-2	-1	0	-1	-1	-1	-1	-1	+2	**0.7343	0.0101
Networks & Communications	-1	+1	M	M	M	-1	-1	0	0	+2	+2	*0.5762	0.1349
Implementation Climate													
Tension for Change	+1	+1	0	M	+1	+1	-1	0	+1	0	+1	-0.2381	0.5373
Relative Priority	-1	-2	M	M	-1	-1	-1	-1	-2	-2	+1	0.3623	0.3379
Compatibility	+1	-1	+1	+1	-1	+1	-1	+1	+2	+2	+2	*0.552	0.0783
Organizational Incentives & Rewards	M	M	-1	+1	M	+1	M	M	M	M	M	*0.9807	0.1254
Goals & Feedback	-1	+1	+1	+2	-1	+1	-1	+1	-1	-1	+1	-0.1068	0.7547
Readiness for Implementation													
Leadership Engagement	1	-2	1	2	M	0	+1	2	0	1	1	0.3141	0.3767
Available Resources	+1	0	0	+2	-1	+1	0	0	+1	+1	0	-0.1661	0.6694
Access to Knowledge & Information	2	+1	1	2	M	+1	+1	+2	+1	-1	1	-0.4227	0.2236
Process Domain													
Planning	+1	+1	+1	+2	+1	0	0	-1	0	M	M	**-0.6798	0.044
Engaging													
Implementation Leader	-2	+2	-2	+2	+1	+1	+1	+2	+2	+2	+2	**0.6487	0.0308
Patients	-1	+1	+1	+2	-1	+1	-1	+1	+1	0	+1	0.1414	0.6783
Key Stakeholders	-1	+1	-1	+2	+1	+2	+1	+2	+2	+1	+2	**0.6559	0.0284
Reflecting & Evaluating	M	-1	0	+2	0	-1	+1	+1	+1	+1	0	0.3296	0.3863

Key:
M denotes missing data
0 denotes mixed or neutral data
** denotes a strongly distinguishing construct
* denotes a weakly distinguishing construct

Fig 2 | Consolidated Framework for Implementation Research (CFIR) construct ratings[1] and correlations to implementation outcomes (referral rate) by facility. [1]Ratings for each construct reflect its valence (positive [+] or negative [–] impact on implementation) and its strength of manifestation (weak [1] or strong [2] impact on implementation) [33]

> *when I'm doing MI [motivational interviewing] and TEACH (clinician coaching) training too. I always have [a stack of the information sheets] in my little portfolio thing that I carry around with me…I just met with the local recovery coordinator last week and talked to her all about it. She wants me to come to the social work meeting and train the social workers on the use of [the TLC program]* [TLC program POC, Facility 9, high implementation success facility]

In contrast, engagement strategies were limited at the lowest referring facilities, in part because of vacant staff positions. One of the facilities that targeted the TLC program to their community-based outpatient clinics acknowledged that lack of ongoing communications and interactions hindered the program:

> *[…] in hindsight I realized that I went into this kind of naively because, I just thought I was going bearing gifts and everybody was going to be uber excited about this resource. And even when they are, I think that I missed the boat as far as follow-up.* [TLC program POC, Facility 1, low implementation success facility]

Structural Characteristics (organizational structure or social architecture) strongly correlated ($r=.73$; $p=.01$) with referral rates. One facility with among the highest referral rates consolidated management of all prevention programs under the leadership of one of the TLC program implementation leaders. Thus, PCPs did not have to choose the individual program to which to refer a patient, but rather referred patients to a single consolidated set of prevention programs. Referred patients attended an orientation session where all prevention program choices, including the TLC program, were described.

Facilities with the lowest referral rates struggled with several structural challenges. For example, leaders at one facility told TLC program implementation leaders they could not "market" the TLC program to PCPs because the primary care clinic was in the throes of transitioning to the PCMH model. In another example, implementing the TLC program in outlying community-based outpatient clinics discussed above stymied implementation leader efforts to engage PCPs because some community-based outpatient clinics were hundreds of miles away from the medical centers where the TLC program implementation leaders were located.

Two facilities that had among the lowest referral rates acknowledged this structural challenge which undermined their *Planning* (a scheme and tasks for implementing the TLC program developed in advance) to target their community-based outpatient clinics, which was strongly negatively correlated with referral rates ($r=-.68$; $p=.04$). They believed this plan would give access to the TLC program to patients who would benefit most because of the long distances to on-site prevention programs:

> *…we kind of took what we would call a rural health perspective, and thought of the program being rolled out at the CBOCs [community based outpatient clinics that were the farthest out from the main facility […] We were going to roll it out at one facility per month and we started with those that were farthest out and have the fewest resources. So places that didn't have anybody with behavioral health or were geographically very remote from the main [medical center].* [TLC program POC, Facility 1, low implementation success facility]

However, during their follow-up interview, these teams reported that they had underestimated the effort needed to engage staff and PCPs at smaller resource-constrained clinics and ultimately implemented the program in the main facility.

> *We've had to really change our approach and expand the number of clinics that are involved because […] there either was an initial, a [low…] number of consults placed, or really none and it just really hasn't taken off. So we've actually opened it up to more of the clinics [at the medical center]* [Administrator, Facility 1, low implementation success facility]

Networks and Communications (the nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization) between the TLC program implementation leaders and with primary care clinics were weakly ($r=.58$; $p=.13$) correlated with referral rates. At two of three of the highest-referral facilities, TLC program implementation leaders had strong working relationships with primary care leaders and providers, which provided a conduit for frequent informal conversations, in addition to more formal communications through monthly staff meetings and other opportunities. PCPs actively supported the TLC program because they liked and trusted their TLC program implementation leaders:

> *[They] run a really good program; they know what they're doing. I trust them […] When they come to me […] I listen to them and then I follow up. So I think they're a big part of the motivation too […] that they believe in this and they've embraced it […]* [PCP and Primary Care Leader, Facility 10, high implementation success facility]

Furthermore, prior and ongoing working relationships between the TLC program implementation leaders within facilities were also influential. In the two facilities with the highest referral rates, TLC program implementation leaders had offices that were located in close physical proximity and

they communicated frequently and worked closely together:

> *So there's a lot of benefit to us having a really good working relationship, and then trying to find gaps in programming, because we all are aware of what the other people are doing…* [TLC program POC, Facility 11, high implementation success facility]

In contrast, TLC program implementation leaders at facilities with the lowest referral rates did not have strong relationships with key stakeholders within primary care. At these facilities, few providers were familiar with the TLC program or remembered to refer patients.

Compatibility of the TLC program (the degree of tangible fit between meaning and values attached to the intervention by involved individuals and fit with existing workflows) was weakly ($r = .56$; $p = .08$) correlated with referral rates. Facets of compatibility included the ability of the vendor's coaches to access EHRs at each of the demonstration facilities and compatibility of the TLC program with existing prevention programs. One of the most challenging implementation issues for all facilities was related to establishing information technology processes necessary to provide TLC program coaches access to the electronic health record at each facility. This level of access was essential for receiving referrals, obtaining contact information for patients, and documenting coaching sessions. The final solution was a compromise: at five demonstration facilities, coaches were able to access referrals and enter coaching session notes directly into the EHR. Coaches did not, however, have direct access to the electronic health record at the remaining demonstration facilities. Instead, referrals were routed through the other five facilities, which made it difficult for clinicians to access session notes for their patients, though the more complicated procedures for doing so were documented. PCPs at three of the lowest-referral facilities and a mid-referral facility without direct electronic health record access expressed frustration over not having feedback about the status of their patients referred to the TLC program:

> *I find that maybe the biggest drawback and maybe why people don't refer is you know, it's trying to send a consultation and never getting a report back on what the findings were [….] without having information on that, I'm not so sure that […] there's much value in it.* [PCP, Facility 7, mid implementation success facility]

All 24 demonstration facilities had existing prevention programs. The most common lifestyle goals for Veterans enrolled in the TLC program were weight loss (50 %) and tobacco cessation (44 %). The MOVE! program was prominent among on-site prevention programs. At the top referring facilities, staff gave specific examples of the TLC program's perceived compatibility with the MOVE! program; they believed it reinforced both their stance on prevention and their active use of coaching approaches and goal-setting with patients:

> *When we talk about disease prevention and health promotion, the health coaching just fits right in and it's such a complement to it, and since we […] have a really strong conviction about wellness and self-management […] this health coaching and what we're doing with health promotion really helps the patient to have ownership for their processes and their living, and it definitely blends very nicely with the health coaching […] it complements [our communications about prevention]…We here in [the] Health Promotion Disease Prevention program are really the great influencers to clinical practice change and [the TLC program] is such a good complement for us.* [TLC program POC, Facility 8, mid implementation success facility]

In addition, a wide range of staff (e.g., PCPs, RN care managers) were allowed to refer patients to the TLC program and access reports to track whether patients were enrolled successfully.

In contrast, at the three facilities with the lowest referral rates, staff members were vague about the compatibility of the TLC program with existing programs. In addition, at two of these facilities, only PCPs were allowed to refer patients to the TLC program:

> *Our nurses are specifically forbidden to write orders that can be held for a physician's signature. So everything that gets written has to be written by a physician […] this has formed a really labor intensive situation for practitioners, so they are super rebelling against anything else coming down.* [MOVE! program coordinator, Facility 2, low implementation success facility]

Organizational Incentives and Rewards to help encourage referrals to the TLC program had a high correlation coefficient ($r = .98$) but because it was mentioned by only three facilities, it was only marginally significant ($p = .12$) and therefore deemed weakly correlated with referral rates.

DISCUSSION

Implementation of the TLC program was deemed successful when considering overall rates of referrals; the targeted number of referrals was met. However, there was variability between facilities, and this study reveals factors that likely contributed to this variation. Demonstration facilities made an average of 13.2 referrals to the TLC program per 1000 Veterans, 57 % of whom enrolled and participated in at least one telephone coaching session. This translates to approximately 7.5 enrollees per 1000 candidate Veterans. These results compare favorably with Goode and

colleagues' report of dissemination of a telephone-based coaching program aimed at improving diet, exercise, and weight. They reported 29 % of facilities generated 377 patient referrals over a 2-year period [36]. Their setting was similar to the TLC program demonstration with respect to having a centralized entity within the community that provided telephone-based coaching and helped coordinate referral processes. Goode and colleagues described coach training and preparation for the coaching intervention, but little information was provided about the contextual factors of facilities that may have contributed to the relatively low proportion of facilities that referred patients [36]. The use of the CFIR to organize data collection and analysis helped identify and categorize contextual challenges that arose for some facilities when implementing a process to refer patients to the TLC program, a program similarly delivered by an outside entity.

Goode and colleagues described the significant supports provided to facilities by a centralized research team [37]. In the current study, rather than a research team, NCP, a national field coordinating office charged with leading prevention initiatives within a large integrated healthcare system, provided these supporting functions. This affirms the importance of meaningful support from a centralized entity, but demonstrates that the entity does not need to be a research team.

Published evaluations of implementing the MOVE! program in the VHA offer a point of comparison with current findings [9, 10]. Because both studies used the CFIR, it was possible to compare findings across the two projects. Implementation evaluations of the MOVE! and TLC programs both identified *Networks and Communications* as a distinguishing construct, which highlights the importance of strong working relationships and communications with primary care clinics, because in both cases, PCPs were the primary source of referrals.

Both experiences also highlight the importance of engaging *Key Stakeholders* (e.g., PCPs, clinic leaders) using multiple communication strategies, including sharing information about the program at staff meetings, posting on e-bulletin boards, and working to identify specific patients who may benefit from the program by attending team meetings. No other constructs were consistently identified as distinguishing across the two studies. This lack of consistency may be due to the significant differences between the TLC program and the MOVE! program; while the TLC program was delivered by an outside entity, the MOVE! program is an on-site group-based weight management program delivered by a local interdisciplinary team of staff. These two studies, both having used the CFIR to assess context, provide more in-depth understanding about what contextual factors influence implementation under which circumstances. Use of the CFIR provides common terminology and language that promotes consistent use of constructs and the ability to compare findings across implementation studies. Additional research using the CFIR will help determine the most common factors associated with implementation success. This information is vital to be able to tailor strategies to maximize the chances of successful implementation [38].

This study has several limitations. First, not all of the demonstration facilities were evaluated in depth. However, the sample consisted of a broad cross-section of facilities with respect to referral rates. Second, results are based on interviews with stakeholders who may not be representative of their local facility or the VHA overall. Third, varying depths of information were collected from demonstration facilities over time; this is reflected in part by the range of individuals (2–19) who participated from each facility. In particular, PCPs contributed valuable information related to identifying and understanding referral processes and it was not possible to interview providers at all facilities.

The VHA is developing mechanisms to make the TLC program available in the national VHA healthcare system. These findings have been used to guide development of a toolkit that will be used as a basis for future scaling up and guidance for facilities that choose to implement the TLC program.

CONCLUSION

Over 9000 Veterans were referred to the TLC program within the VHA. Although all demonstration facilities received significant support and resources from NCP, there was a 21-fold variation in referral rates across the 24 facilities participating in the demonstration. Facilities with high implementation success had skilled implementation leaders who led effective multi-component strategies to engage PCPs and staff, the most important source of referrals, and clinic structures that supported implementation. In addition, there were strong, productive working relationships across organizational boundaries and within the implementation team and the TLC program was compatible with clinic work processes. These factors were lacking at facilities with low implementation success and the TLC program was targeted to distant community clinics that did not have sufficient local support.

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Compliance with ethical standards

Competing interests: The authors declare that they have no competing interests.

Informed Consent Statement: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

1. Pronk NP. The power of context: moving from information and knowledge to practical wisdom for improving physical activity and dietary behaviors. *American Journal of Preventive Medicine*. 2012; 42(1): 103-4.
2. Danaei G et al. The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *PLoS Medicine*. 2009; 6(4), e1000058.
3. Das SR et al. Obesity prevalence among veterans at Veterans Affairs medical facilities. *American Journal of Preventive Medicine*. 2005; 28(3): 291-4.
4. Brown DW. Smoking prevalence among US veterans. *Journal of General Internal Medicine*. 2010; 25(2): 147-9.
5. Institute of Medicine. *Returning Home from Iraq and Afghanistan: Preliminary Assessment of Readjustment Needs of Veterans, Service Members, and Their Families*. Washington: The National Academies Press; 2010.
6. Armed Forces Health Surveillance Center (AFHSC). Diagnoses of Overweight/Obesity, Active Component, U.S. Armed Forces, 1998–2008. *The Medical Surveillance Monthly Report (MSMR)*. 2009; 16(1): 2-7.
7. Kahwati LC et al. RE-AIM evaluation of the Veterans Health Administration's MOVE! Weight Management Program. *Translational Behavioral Medicine*. 2011; 1(4): 551-560.
8. Littman AJ et al., *National Evaluation of Obesity Screening and Treatment among Veterans with and without Mental Health Disorders*. General Hospital Psychiatry, In Press.
9. Damschroder L et al. A systematic exploration of differences in contextual factors related to implementing the MOVE! weight management program in VA: a mixed methods study. *BMC Health Services Research*. 2011; 11(1): 248.
10. Damschroder LJ, Lowery JC. Evaluation of a large-scale weight management program using the consolidated framework for implementation research (CFIR). *Implementation Science*. 2013; 8: 51.
11. *Behavioral counseling in primary care to promote a healthy diet: recommendations and rationale.* Am J Prev Med, 2003. **24**(1): p. 93–100.
12. Dale J et al., *Peer support telephone calls for improving health*. Cochrane Database Syst Rev, 2008(4): p. Cd006903.
13. Donnelly JE et al. Equivalent weight loss for weight management programs delivered by phone and clinic. *Obesity (Silver Spring)*. 2013; 21(10): 1951-9.
14. Gold DB, Anderson DR, Serxner SA. Impact of a telephone-based intervention on the reduction of health risks. *American Journal of Health Promotion*. 2000; 15(2): 97-106.
15. McKay JR et al. The effectiveness of telephone-based continuing care in the clinical management of alcohol and cocaine use disorders: 12-month outcomes. *Journal of Consulting and Clinical Psychology*. 2004; 72(6): 967-79.
16. Perri MG et al. Extended-care programs for weight management in rural communities: the treatment of obesity in underserved rural settings (TOURS) randomized trial. *Archives of Internal Medicine*. 2008; 168(21): 2347-54.
17. Stead LF et al. Telephone counselling for smoking cessation. *Cochrane Database of Systematic Reviews*. 2013; 8, Cd002850.
18. Goode AD, Reeves MM, Eakin EG. Telephone-delivered interventions for physical activity and dietary behavior change: an updated systematic review. *American Journal of Preventive Medicine*. 2012; 42(1): 81-8.
19. Aziz Z et al. A systematic review of real-world diabetes prevention programs: learnings from the last 15 years. *Implementation Science*. 2015; 10: 172.
20. Hammal F et al. Expanding the reach of the Quitline by engaging volunteers to market it in hospitals and shopping venues—a pilot study. *Tobacco Induced Diseases*. 2015; 13(1): 13.
21. Hooker SP et al. The California active aging community grant program: translating science into practice to promote physical activity in older adults. *Annals of Behavioral Medicine*. 2005; 29(3): 155-65.
22. *US Preventive Services Task Force Guides to Clinical Preventive Services*, in *The Guide to Clinical Preventive Services 2014: Recommendations of the U.S. Preventive Services Task Force*. 2014, Agency for Healthcare Research and Quality (US): Rockville (MD).
23. Jensen MD et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Journal of the American College of Cardiology*. 2014; 63(25 Pt B): 2985-3023.
24. Urrutia R. *A Pilot Telephone Lifestyle Coaching Program for Veterans Improves Multiple Health Behaviors. Preventive Medicine 2015: Annual Meeting of American College of Preventive Medicine*. Atlanta: American College of Preventive Medicine; 2015.
25. Creswell JW, Clark VLP. *Designing and Conducting Mixed Methods Research*. 1st ed. Thousand Oaks: Sage Publications, Inc. 274; 2007.
26. *FY 2008 Facility Complexity Level Model*. Washington, DC: Veterans Health Administration.
27. Helfrich C et al. Organizational readiness to change assessment (ORCA): development of an instrument based on the Promoting Action on Research in Health Services (PARiHS) framework. *Implementation Science*. 2009; 4(1): 38.
28. Hollis JF et al. The effectiveness and cost effectiveness of telephone counselling and the nicotine patch in a state tobacco quitline. *Tobacco Control*. 2007; 16(Suppl 1): i53-9.
29. Curry SJ et al. Use and cost effectiveness of smoking-cessation services under four insurance plans in a health maintenance organization. *New England Journal of Medicine*. 1998; 339(10): 673-9.
30. Powell BJ et al., *A refined compilation of implementation strategies: results from the expert recommendations for implementing change project.* Implementation Science, In Press.
31. Damschroder L et al. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science*. 2009; 4(1): 50.
32. Forman J, Damschroder LJ. Qualitative content analysis. In: Jacoby L, Siminoff L, eds. *Empirical Research for Bioethics: A Primer*. Oxford: Elsevier Publishing; 2008: 39-62.
33. Damschroder LJ et al. The role of the champion in infection prevention: results from a multisite qualitative study. *Quality & Safety in Health Care*. 2009; 18(6): 434-40.
34. Proctor E et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health*. 2011; 38(2): 65-76.
35. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Huberman M, Miles MB, eds. *The Qualitative Researcher's Companion: Classic and Contemporary Readings*. Thousand Oaks: SAGE Publications, Inc; 2002: 305-330.
36. Goode A et al. Results from the dissemination of an evidence-based telephone-delivered intervention for healthy lifestyle and weight loss: the Optimal Health Program. *Transl Behavior Medicine*. 2013; 3(4): 340-50.
37. Goode AD, Eakin EG. Dissemination of an evidence-based telephone-delivered lifestyle intervention: factors associated with successful implementation and evaluation. *Transl Behav Med*. 2013; 3(4): 351-6.
38. Powell BJ et al. A compilation of strategies for implementing clinical innovations in health and mental health. *Medical Care Research and Review*. 2012; 69(2): 123-57.