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Barriers to Integrating Tobacco Dependence Treatment into Lung Cancer Screening: A Qualitative Assessment

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Abstract

Introduction/objective: We qualitatively assessed current practices and perceived barriers surrounding the integration of tobacco dependence treatment (TDT) into lung cancer screening (LCS). **Methods:** Informed by the Practical, Robust Implementation and Sustainability Model, we conducted semi-structured interviews with clinicians ($n = 18$) at 6 Veterans Affairs medical centers in the Midwest. **Results:** TDT was usually addressed at an initial shared decision-making visit but often not with subsequent rounds of screening or nodule follow-up. No site was aware that any TDT-related outcomes were tracked within their program. While the LCS clinical reminders included some aspects of tobacco use (eg, tobacco pack-years), they did not support clinicians in offering TDT or capture outcomes and were perceived as "checkboxes to nowhere." This was contrasted with other clinical reminders linked to dashboards that provide rolling feedback for important clinical outcomes (eg, diabetes care). Interviewees reported competing demands and limited expertise in motivational interventions as additional barriers. A dedicated team for TDT and a "one-click referral" were perceived as key success factors. **Conclusions:** TDT remains poorly integrated into LCS. Addressing identified barriers will require considerable investment in TDT resources and improvements to LCS tools to support the provision of cessation support.

Keywords

lung cancer, tobacco use disorder, quality improvement, qualitative research

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Background

Most patients who are eligible for lung cancer screening (LCS) smoke,[1] making LCS a key opportunity to offer tobacco dependence treatment (TDT). For example, one study found that even a 15% increase in smoking cessation at LCS would double the mortality benefit of LCS itself.[2] LCS alone without a TDT intervention has little effect on smoking.[3] Treatment guidelines recommend patients receive robust motivational interventions to increase quit attempts followed by intensive pharmacotherapy and behavioral treatment.[4-6] However, few patients participating in LCS receive this combination treatment, with a disparity in treatment for rural-residing individuals.[7] This represents a worrisome gap in care. TDT is highly cost-effective with benefits that reach beyond lung cancer prevention.[8,9] Access to an effective TDT program and a discussion of cessation support options are required components of LCS,[10,11] yet these processes are poorly integrated. LCS and TDT are both complex, with care often shared between multiple clinicians and departments, which may hamper care delivery.

This gap in care has been increasingly recognized across LCS programs, resulting in a call to apply implementation methodologies to speed integration of TDT into LCS.[12] Therefore, the purpose of this study was to apply an

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implementation science framework to understand current practices, barriers, and gaps for integrating TDT and LCS among Midwest Veteran Affairs (VA) medical centers.

Methods

Conceptual Framework and Approach

We completed semi-structured, one-on-one interviews. The study was guided by the Practical, Robust Implementation and Sustainability Model (PRISM)[13] which is a widely used model in implementation science to guide the evaluation of how a program or intervention interacts with the intended users to influence adoption, implementation, maintenance, reach, and effectiveness. The PRISM model is composed of 4 major domains: (1) program or intervention, (2) external environment, (3) infrastructure, (4) and recipients, with each domain including several elements. The PRISM was used to inform interview guide development and analysis. For example, to understand external environment, we asked participants about the impact the endorsement of incorporating TDT into LCS by the US Preventative Services Task Force and the Veterans Health Administration has had locally. To understand the perspectives of recipients (ie, patients) we asked interviewees to reflect on their experience addressing tobacco dependence with LCS participants.

Interviewee Selection

Participants were purposively sampled to ensure representation from key clinical roles participating in LCS and TDT, including LCS program staff, tobacco lead clinicians, and primary care providers (PCPs). Each VA medical center designates 1 employee as the "tobacco lead clinician." The tobacco lead clinicians have varied clinical backgrounds (eg, psychologist, social worker, nurse) and work with the Tobacco Use Treatment National Program Office to oversee local TDT efforts. The PI identified known LCS staff (physician leaders, nurse coordinators, advanced practice providers) via the Veteran Integrated Service Network (VISN)-23 LCS committee. Tobacco lead clinicians were identified based on a nationally-maintained directory. Participating LCS staff were asked to provide names of PCPs who referred patients for LCS at each medical center. One medical center did not have a formal LCS program, therefore the PI reached out directly to medical center leadership. In total, 34 individuals were invited to participate by the PI via e-mail.

Data Collection

An interview guide was developed and piloted with 2 clinicians. Interviews were conducted virtually by 1 of 2 members of the study team (DP, NS) trained in qualitative methods, recorded with permission, and transcribed. Almost all interview questions had predetermined prompts and follow ups (eg, how patient eligibility is assessed, who tracks results, how does patient follow up occur) to ascertain an in-depth picture of how TDT is integrated into LCS. However, the interviewers took a flexible approach and modified follow-up questions based on interviewee responses. The VA IRB determined that this study was quality improvement. All identifiable information was maintained in a secure folder behind the VA firewall.

Analysis

Transcripts were coded in NVivo using directed content analysis based on the PRISM constructs and emergent content analysis. Two researchers (MC, DP) independently reviewed the same 2 transcripts and applied the PRISM coding framework. The team then met to discuss coding and revise the codebook. An additional 3 transcripts were reviewed by the same investigators and alignment and application of the PRISM codes were discussed to reach consensus. All transcripts were then coded by MC using the agreed upon codebook, with every 5th reviewed with the PI to ensure agreement.

Results

A total of 17 Interviews were completed and lasted an average of 20 min. The other 17 individuals who were invited either declined or did not respond to our interview request. We felt that we achieved data saturation, the point at which no new information emerges from the transcripts, with our 17 participants. Individuals were interviewed from 6 VA medical centers: Minneapolis, Omaha, Fargo, Black Hills, St. Cloud, Iowa City. Participants included 6 tobacco lead clinicians (1 psychologist, 2 registered nurses, 1 nurse practitioner, 2 social workers), 4 primary care providers (3 general internists, 1 nurse practitioner), 2 physician leaders involved in LCS oversight (1 pulmonologist, 1 general internist), and 5 LCS coordinators (4 registered nurses, 1 advanced practice provider). Table 1 outlines each PRISM element that occurred in the study along with a brief description of how it presented. The following is a description of codes that emerged in each respective PRISM domain.

Program

Burden and barriers. According to PRISM, a new intervention may pose a burden, both in terms of complexity and cost, as well as barriers that need to be addressed.[13] With regards to integrating TDT into LCS, there were a number of factors that contribute to burden that were raised by interviewees. Several mentioned the need for more education and resources around the process of providing TDT and

Table 1. Brief Description of How PRISM[13] Elements Occurred in This Study Grouped Under Their Respective Domain.

PRISM element	Brief description
Program (intervention)	
Burden and barriers	Barriers include the need for additional education and resources, as well as staffing. In addition, the limited time available in primary care visits.
Usability and trialability	Several attempts (from PCPs and from LCS staff) may be needed to address TDT. Also, a standard, automatized approach across the system is needed. The offer for TDT may be more effective if it comes from someone from the patient's primary care team with whom they are familiar.
External environment	
Regulatory environment	National endorsement of LCS that incorporates TDT has had minimal clinical impact according to most participants.
Implementation and sustainability infrastructure	
Performance data	Limited data regarding TDT is tracked, and it is rarely routinely tracked.
Dedicated team	Different team members are available for TDT across sites. Interdisciplinary resources, such as Primary Care Mental Health Integration and the presence of pharmacists were cited as being beneficial.
Cross-site communication/TDT-LCS integration	Sites are unfamiliar what other VA sites are doing to address TDT in LCS. Sites do not report TDT processes that are specific to LCS.
Recipients	
Shared goals and cooperation	There was a difference in opinion as to whether or not integrating TDT into LCS was a high priority. In primary care, other clinic initiatives may take precedence over TDT and that not enough emphasis is placed on harm reduction (ie, reducing smoking vs quitting completely).
Systems and training	There are some electronic health record TDT reminders available for initial LCS, but they are easy to miss for repeat encounters. Additionally, tobacco usage is not routinely collected creating a barrier.
Competing demands	Both patients and providers face competing demands around addressing TDT. For patients, they may have other matters, such as acute complaints, personal issues, or working to address other substance use that may impede TDT. For providers, workload and limited time to address the things that are expected to be covered in a primary care visit limit TDT discussion.
Patient engagement	Patient engagement and follow-through can be a barrier to starting TDT. To maximize patient engagement in TDT, it is important to consistently remind patients of TDT resources. An engagement strategy that has been effective has been peer groups; however, with the pandemic and restructuring, this is not available to all sites now.

using motivational interviewing techniques. One lung cancer screening coordinator stated, "I don't know how qualified or confident I would be with my skillset in (offering TDT)." Another barrier mentioned was the limited time in primary care and LCS visits to cover necessary components. Staffing was a challenge mentioned by several participants, with many suggesting that more staff are needed to provide TDT, such as behavioral health counselors and those with TDT prescribing authority. When non-prescribers are providing TDT, processes to access pharmacotherapy are often inefficient (eg, handing patients "back and forth") to access both medications and counseling.

Usability and trialability. In PRISM, usability (ease of use and perceived usefulness of the intervention) and the ability to try the program (trialability) are 2 separate elements.[13] However, for this work, we combined them into 1 code. There were several suggestions to improve integrating TDT into LCS to improve usability and trialability. For example, a few interviewees discussed the need to have repeat outreaches and multiple roles addressing TDT. One LCS coordinator put it, TDT should be addressed "from 2 angles, from the PCP side and from the programmatic side, because it is incredibly difficult to quit." They went on to emphasize the importance of continuing to offer resources to quit because it often takes several attempts and that PCPs are well positioned to do this because they are on the "frontline" and often see the patient on a regular basis. One interviewee commented that for TDT to be successful, there needs to be a standardized, evidence-based approach. An LCS coordinator suggested automatizing the process more in the electronic health record to avoid manual tracking and reminders. Several participants also stressed the importance of "selling" TDT to patients and that there might be limited buy-in if it is presented by someone outside the patient's primary care team. As 1 PCP said, "If you put a bunch of

. . . tobacco counselors and extra nurses and everyone else on the pulmonary lung cancer screening side to do (TDT) with all of the patients . . . I think one of the challenges you'll run into is that those aren't people that the patient knows, and so I think it would be challenging to get buy-in."

External Environment

Regulatory environment. Lung cancer screening that incorporates tobacco dependence treatment has been endorsed by the US Preventative Services Task Force, the Centers for Medicare and Medicaid, and the Veterans Health Administration.[1,10] This was brought up to participants during the interviews and they were asked what impact, if any, this has had on TDT at their site. Two participants commented that it has had a positive impact because it is part of initial clinical reminders, and more PCPs are ordering CTs for LCS. However, several others were unsure of the benefit this endorsement has brought or felt it did not have any impact. A few noted it is a difficult outcome to track and not something they receive regular feedback on, unlike other quality metrics.

Implementation and Sustainability Infrastructure

Performance data. The performance data code included responses about how TDT data is tracked, reported, and shared with teams. Most interviewees commented that very little, if anything, is tracked related to TDT. A few interviewees reported that, as part of an annual process, patients' interest in quitting tobacco is documented by a nurse, as well as if TDT is offered, but no other metrics. However, this data may not be routinely reported to clinicians or assessed often.

Dedicated team. The importance of a dedicated team for TDT was a recurrent theme. For example, 6 participants discussed Primary Care Mental Health Integration (PCMHI) and the benefit of having a multidisciplinary team as a referral outlet. PCMHI is a program implemented by VA with the goal of fostering more comprehensive care for Veterans with mental health comorbidities, integrating mental health staff into each Patient Aligned Care Team. One tobacco lead clinician commented on the benefits of having a team available for TDT, "Here we have a lot of different mental health providers trained, so I think that is excellent because of the high comorbidities between mental health and tobacco use." Others mentioned having pharmacists on their team and the benefits they bring with their ability to prescribe TDT medications. Another provider mentioned staff shortages and restructuring as a barrier because there were limited team members available to refer to provide TDT, particularly with prescriptive authority.

Cross-site communication and TDT-LCS integration. While not a specific construct in PRISM, cross-site communication and inter-program communication were potential barriers that emerged in interviews. All participants indicated that they were unaware what other VA sites were doing with regards to integrating TDT and LCS. Interviewees also indicated they were unaware of LCS-specific processes that had been adopted to increase TDT in these programs, apart from 1 site who indicated the nurse coordinators placed tobacco referrals to PCMHI.

Recipients

Shared goals and cooperation. According to PRISM, having clear goals that are communicated across an organization are key for successful implementation.[13] In this study, most participants in different roles commented that integrating TDT into LCS was a high priority. However, 3 interviewees commented that it did not seem a high priority. One primary care provider remarked that given other clinic initiatives, TDT did not feel as high of a priority, "I do think that tobacco contributes to so many other health issues that it should be more important than some of the other reminders and screenings that we get. I mean, there's a lot of focus on lipids and diabetes, but I just don't feel like there's near the focus on tobacco." Lastly, 1 tobacco lead clinician commented that TDT was a high priority for them, but that it may not be adopted by all clinicians or roles may be unclear, "Whether or not the providers are willing to prescribe is really the biggest challenge."

Systems and training. Systems and training encompass ways in which available tools, processes, and trainings support TDT into LCS. Participants discussed that there were TDT reminders available in the electronic health record for initial lung cancer screening, but if the patient was in clinic before the reminder was due again, it was easily missed. Furthermore, tobacco usage is not routinely collected from visit to visit, which can pose a barrier.

Competing demands. The PRISM model points out that there are patient factors that should be considered to maximize reach and effectiveness of interventions.[13] All PCPs that were interviewed mentioned competing demands that get in the way of addressing TDT, such as acute complaints (eg, knee pain), personal issues (eg, death of a loved one), or working to address other substance use (eg, alcohol, drugs). One tobacco lead clinician shared, "Outpatient there is a lot of substance use, like alcohol use, meth use that is a competing factor I think where they're like thinking, "I can't give up this 1 thing (tobacco) that I have when I need to give up these other things." While not mentioned in the PRISM, competing demands among providers emerged as a barrier as well. All primary care providers discussed visit time and all that needs to be completed within that time as an obstacle. Additionally, a PCP brought up they already have a large workload, "My big challenge with all these

Table 2. Identified Barriers and Potential Solutions for Integrated Tobacco Dependence Treatment and Lung Cancer Screening.

Identified barrier	Possible solution
Need for additional resources and staffing	• Provide additional TDT referral education to clinic teams • Partner with national resources
Limited time available to address TDT in visits	• Streamlined TDT referral options to minimize burden on the team
Lack of a standardized approach to addressing TDT	• Develop a process that can be integrated into the electronic health record to support standardization and consistent data collection
National standards have had minimal clinical impact	• Obtain local leadership support and buy-in for integrating TDT into LCS
TDT data is not routinely tracked	• Develop a process that can be integrated into the electronic health record to support consistent data collection
Lack of communication across sites about TDT best practices	• Schedule periodic facilitated group check-ins where updates and best practices can be shared
TDT is not prioritized as a quality measure	• Support inclusion of formal metrics
Limited electronic health record tools are in place to encourage TDT reminders	• Work with IT and care teams to determine optimal IT strategies that facilitate workflow
Patients may have other concerns that take priority over addressing TDT	• Educate clinic teams to place referrals so that visit time can concentrate on chief concerns but patients are still connected to resources
Patient engagement in TDT can be low	• Offer options of TDT to patients so that they may choose an approach that fits with their preferences • Support "change" in addition to cessation

initiatives is they often end up creating more work for primary care without kind of taking other things off our plate or reducing our panel sizes, and so it's challenging for us to do more without more resources."

Patient engagement. While not a construct in PRISM, patient engagement was an emergent code that presented related to patients' behaviors and responsiveness to TDT offers and LCS. Patient engagement can be a barrier, so interviewees discussed the importance of "planting the seed" and constantly reminding the patient of TDT resources. One provider also discussed that patients may sometimes be put off by health care providers because, "They see us as a little bit altruistic and preachy because we're not smokers, we wouldn't know." An LCS coordinator also brought up that patient follow through can also be a barrier. Several participants mentioned peer groups as an effective strategy to engage Veterans and the benefits provided by peer support. However, following COVID-19, some noted there has been less face-to-face care and how this seems to hinder engagement. Lastly, 2 participants commented that patients often become more engaged in TDT after a health event or have findings present on a scan (eg, nodule, emphysema), which underscored the need to assess interest in treatment repeatedly through the LCS process.

Discussion

In this qualitative analysis of clinicians participating in LCS, despite a general agreement that TDT is important, we found a concerning lack of a coordinated approach to integrating these 2 processes. These findings echo some of our previous work, noting little integration between these processes.[14-16] Participating clinicians reported several robust mechanisms for providing TDT to patients who request it, but for the most part viewed the referral and treatment process as separate from the screening program and not a part of longitudinal LCS care. Specifically, there were no mechanisms mentioned to address TDT with subsequent rounds of screening.

One of the key barriers that emerged was the perception that TDT in LCS is not a mandated process, lacking system support. This was contrasted with other routine preventive health care, such as diabetic surveillance or lipid management, that were included in performance data. The lack of inclusion of TDT in many of the informatics tools used to support high-quality LCS added to that impression. Some clinicians noted there is an annual nurse-facing tobacco reminder, but that a similar systematic process is not applied to LCS. Adding TDT decision support and trackable data to LCS tools, templates, and databases may partially address this. Including TDT as a formal performance metric is likely to be even more effective.

Specific processes to address the TDT-LCS integration and move away from "business as usual" need to be developed that are adapted for site-specific practice characteristics, such as LCS program structure and local referral options for tobacco treatment (Table 2). Some TDT options are available across the VA and in private health systems (eg, warm handoff to a quitline, nicotine replacement) and

can be applied at sites with fewer local resources.[17] The Cancer Center Cessation Initiative[18] can serve as a blueprint for how this can be accomplished. Unsurprisingly, within that initiative sites that integrated more dedicated staff and more comprehensive and systematic electronic health record-based supports were more effective at increasing TDT for patients with cancer.[19]

Finally, clinicians noted both competing demands and a perceived lack of patient engagement as barriers. It is absolutely true that visits are short and both PCPs and coordinators lack sufficient time for lengthy motivational tobacco interventions in context of their other duties.[20] It is therefore even more imperative that staff are educated in local and national referral options and that efficient methods (eg, visit scripts, e-referrals) are in place to address TDT. Streamlining where possible allows processes such as Ask-Advise-Refer[21] to be delivered despite these time limitations. The perceived lack of patient engagement is its own barrier—clinicians are less likely to refer for care they feel is low value. However, motivation to quit smoking changes rapidly, requiring frequent recycling into treatment. At any given time, many patients are considering quitting in the near-term. Presenting the opportunity to make "changes" in use—rather than only discussing quitting completely—can improve engagement.

Our study has limitations. Sites were at different stages of LCS implementation, such that some staff had different experiences with the LCS process to date. In addition, sites varied in both TDT and LCS structure. Though we sought to sample across relevant clinical roles, other themes may have occurred if we had included other roles, such as system leadership. In addition, we did not include the perspectives of patients or caregivers. Finally, the results may not be transferable to those in other health systems with different processes and patient populations.

Conclusion

Tobacco dependence treatment is a key part of LCS but remains underutilized. Future work should include implementation methodologies to speed uptake of best practices. As LCS eligibility increases, the full benefits will only be realized by careful partnership with tobacco treatments.

List of Abbreviations

LCS: lung cancer screening
TDT: tobacco dependence treatment
VA: Veterans Administration
PRISM: practical, robust implementation and sustainability model
PCP: primary care provider
VISN: Veterans integrated service network
PCMHI: primary care mental health integration

Authors' Note

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