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Review
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Review

Considering Systemic Barriers to Treating Tobacco Use in Clinical Settings in the United States

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Abstract

The Comorbidity Workgroup of the Tobacco Treatment Research Network, within the Society for Research on Nicotine and Tobacco, previously highlighted the need to provide tobacco treatment to patients diagnosed with comorbid physical and mental health conditions. Yet, systemic barriers in the United States health care system prevent many patients who present for medical treatment from getting the evidence-based tobacco treatment that they need. The identified barriers include insufficient training in the epidemiologic impact of tobacco use, related disorders, and pharmacological and behavioral treatment approaches; misunderstanding among clinicians about the effectiveness of tobacco treatment; lack of therapeutic support from clinical staff; insufficient use of health information technology to improve tobacco use identification and treatment; and limited time and reimbursement for clinicians to provide treatment. We highlight three vignettes demonstrating the complexities of practical barriers at the health care system level. We consider each of the barriers in turn and discuss evidence-based strategies that could be implemented in the clinical care of patients with comorbid conditions. In addition, in the absence of compelling data to guide implementation approaches, we offer suggestions for potential strategies and avenues for future research.

Implications: Three vignettes highlighted in this article illustrate some systemic barriers to providing tobacco treatment for patients being treated for comorbid conditions. We explore the barriers to tobacco treatment and offer suggestions for changes in training, health care systems, clinical workflow, and payment systems that could enhance the reach and the quality of tobacco treatment within the US health care system.

Introduction

Tobacco use kills more than 480 000 people in the United States every year, making tobacco use the leading preventable cause of morbidity and mortality.[1] Evidence-based treatments are available that can double or triple the chances of quitting smoking,[2] but systemic barriers in the US health care system mean that the 70% of smokers who present for medical treatment every year[3,4] do not receive the evidence-based treatment they need.

The systemic barriers to tobacco treatment in an oncology setting provide a stark illustration of such barriers. An assessment of 58 National Cancer Institute (NCI)-designated Cancer Centers showed that 58.6% reported having some type of tobacco treatment service within their Center and 20.7% reported access to a tobacco treatment program within their health care or university system.[5] However, one in five (20.7%) reported no program or being unsure about affiliated tobacco treatment programs. Large surveys of oncology providers show that while 90% assess tobacco use, less than half provide treatment support to cancer patients even though 80%–90% believe smoking adversely affects cancer treatment outcomes and that tobacco treatment should be a standard part of clinical cancer care.[6,7] In addition to oncology providers, surveys conducted by the Association for American Medical Colleges show similar patterns for general physicians with most physicians consistently asking patients about their smoking status and recommending cessation (86%), but only 13% reporting referral to tobacco treatment.[8] Predictive barriers to providing support include a lack of experience or expertise in tobacco treatment, a lack of time, lack of patient motivation to quit, limited reimbursement, and lack of available resources.[8–10] Many barriers may reflect a larger misunderstanding of available treatment resources,[5] but the complexity of care for the primary disease (ie, cardiovascular and respiratory diseases, mental health disorders, or cancer) in the clinical setting could obfuscate prioritization of tobacco treatment support for patients.

The Comorbidity Workgroup of the Society for Research on Nicotine and Tobacco's Treatment Research Network has previously highlighted the need to provide tobacco treatment to patients diagnosed with comorbid physical and mental health conditions.[11] The literature consistently shows that smoking contributes to comorbid diseases and mortality, adversely affects treatment efficacy for these diseases, and worsens other adverse health conditions.[1,11] Unfortunately, there is a paucity of evidence dedicated to dissemination and implementation of tobacco treatment into clinical care for patients with comorbid conditions. The primary objective of this article is to (1) highlight several system-level barriers for providing tobacco treatment among people with comorbid conditions and (2) discuss potential options for either overcoming these systemic barriers or postulate future research questions to facilitate evidence-based tobacco treatment for this group of patients. This article is directed primarily to health care system administrators and secondarily to treatment providers. The barriers reviewed in this article stem from a review of the literature and from the authors' experiences, but this article is not intended to be a systematic literature review. To facilitate practical discussion on methods to improve tobacco treatment, we provide a variety of suggestions relevant to diverse audiences that would increase access to evidence-based cessation treatment among people who smoke. Researchers continue to work on improving the effectiveness of tobacco treatments, but to truly improve public health and reduce the burden of comorbid conditions for patients, health care systems need to improve the reach of the effective treatments we currently have. Given broad differences in health care systems and structure worldwide, this article will focus on the systemic barriers in the US health care system and present three vignettes to illustrate how these barriers limit treatment implementation; however, fundamental similarities in systemic barriers may make these findings applicable across other health care systems and nations.

Considering Practical Barriers To Receiving Tobacco Treatment In Patients Being Treated For Comorbid Conditions: Vignettes

Vignette 1—Cancer

Mrs Smith is a 57-year-old female with a newly diagnosed lung cancer. She reports smoking one pack of cigarettes per day for 33 years. She quit smoking for 2 years at one point, but she has a prior history of depression and the recurrence of her depression coincided with a relapse to smoking. She has been evaluated for curative treatment for her lung cancer by the surgeon, who advised her to quit smoking because smoking can adversely affect cancer treatment outcomes. She is also seeing another health care provider who told the patient that quitting smoking is not a priority while she is so depressed and dealing with the stress of her cancer diagnosis. The surgeon re-emphasizes quitting smoking before surgery and has stated that she is reluctant to perform the surgery if Mrs Smith is still smoking because of the increased risk of complications. The surgeon recommends that Mrs Smith pick up some type of nicotine replacement therapy from her local drug store, but does not take time to discuss how to use the nicotine replacement products, develop a quit plan, or even talk about her willingness to quit. The cancer center where the surgeon practices does not offer dedicated tobacco treatment services. Mrs Smith is overwhelmed by the stress and anxiety of her new cancer diagnosis and treatment, the difficulty in choosing among the variety of possible cessation medications and side effects, and not knowing the best way to make an effective quit attempt; she strongly doubts her ability to quit in time for surgery.

Vignette 2—Orthopedic Surgery

Mr Jones is a 68-year-old man undergoing left hip replacement due to arthritis, immobility, and pain in the joint. He has smoked one pack of cigarettes per day for the past 52 years, and smokes as soon as he wakes up in the morning. At his pre-surgical appointment, the surgeon tells Mr Jones that he will not be able to smoke while he is admitted to the hospital and that he will also have to remain abstinent from smoking after the surgery to allow for optimal healing of the hip. Mr Jones has been feeling frustrated with his health lately due to the chronic pain and mobility challenges caused by his hip and his difficulty breathing. He has recently been told he has chronic obstructive pulmonary disease and is ready to make some major health behavior changes including quitting smoking. The hospital where the orthopedic surgeon practices has a tobacco treatment service with an automatic tobacco cessation referral service. When tobacco use is reported upon admission to the hospital, an automated referral for the patient is sent to the tobacco treatment program and a provider visits the patient during admission to discuss tobacco cessation. Though Mr Jones has not quit smoking prior to admission for his surgery, he is interested in participating in the program that the inpatient tobacco treatment counselor recommends, and is scheduled for a follow-up appointment with an outpatient tobacco treatment specialist. The tobacco treatment specialist submits an

order for nicotine replacement therapy (NRT) patches and lozenges to the surgeon as part of the treatment plan. However, the orthopedic surgeon denies the order for NRT because he says that it will interfere with the healing process after the orthopedic surgery. Mr Jones is discharged without NRT medications. When he meets with the outpatient tobacco treatment specialist 2 weeks after discharge, Mr Jones reports having relapsed to smoking 2 days after discharge from the hospital due to cravings.

Vignette 3—Substance Use Disorder

Ms. Johnson is a 45-year-old woman who has been in methadone maintenance treatment for 10 years. She has a history of both cocaine and heroin use. She was smoking one pack of cigarettes per day starting at age 14, but cut down to 10 cigarettes per day 6 months ago. She reports being abstinent from illicit drugs for 3 years; however, she lapsed 1 month ago and used heroin and benzodiazepines. Smoking has not been discussed during her monthly sessions with her substance use treatment counselor. She has been attending the intensive-outpatient program for treatment of her illicit substance use three times per week since her drug lapse, and she has been going out to smoke with her peers, all of whom smoke, during group "smoke breaks." Her intensive-outpatient program counselor also smokes and has not prioritized tobacco treatment as a part of her treatment for other substance use. Since beginning the intensive-outpatient program, Ms Johnson's smoking has increased to 15 cigarettes per day. Ms Johnson typically has little structure or pleasurable activities during her day and most of the people in her life smoke. She is currently ambivalent about quitting smoking; she wants to quit smoking for her health, and her children want her to quit, but she is worried about what she will do if she becomes stressed or has a craving for drugs and she does not have cigarettes. Furthermore, she is unsure if her insurance covers medications to help her stop smoking.

Summary of Vignettes

These three vignettes highlight significant barriers to providing tobacco treatment for patients being treated for medical conditions. Vignette 1 highlights a physician who is aware of the adverse effects of smoking on cancer treatment and who advocates for tobacco treatment including nicotine replacement, but lacks the knowledge, experience, or time to accurately evaluate and properly treat chronic tobacco use by a motivated but uncertain patient with a newly diagnosed medical condition. Vignette 2 highlights a patient who is motivated to quit smoking, has access to a structured inpatient and outpatient tobacco treatment program, and is being treated by a physician who supports tobacco treatment. However, the physician does not advocate for the use of evidence-based cessation medications containing nicotine, and has a nonevidence-based concern about the impact of nicotine replacement on wound healing, thus resulting in inadequate treatment and continued tobacco use. Vignette 3 highlights the link between substance use and tobacco use within an intensive substance abuse treatment program that does not address tobacco use in its clinical management strategy. The counselor for Vignette 3 also presents an inherent conflict by using tobacco and not prioritizing tobacco treatment. In this situation, the patient remains ambivalent about the importance of tobacco treatment for her overall health. Though substantial work has been done to improve the efficacy of tobacco treatment for patients who actively engage in a cessation effort, these vignettes highlight several pragmatic systemic barriers that prevent patients from having full access to evidence-based tobacco treatment.

Systemic And Regulatory Barriers To Treatment

Numerous systemic barriers prevent more widespread treatment of tobacco use disorder in health care settings including (1) insufficient training in the epidemiologic impact of tobacco use, related disorders, and pharmacological and behavioral tobacco treatment approaches; (2) misunderstanding among clinicians about the effectiveness of tobacco treatment; (3) lack of therapeutic support from clinical staff; (4) insufficient use of health information technology to improve tobacco use disorder identification and treatment; and (5) limited time and reimbursement for clinicians to provide tobacco treatment.[8–10] We consider each of these barriers and review potential solutions.

Insufficient Training in the Epidemiologic Impact of Tobacco Use, Related Disorders, and Pharmacological and Behavioral Tobacco Treatment Approaches

Clear evidence demonstrates that smoking and other forms of tobacco use cause a spectrum of diseases and decrease the effectiveness of disease management such as cancer treatment.[1,11] One specific issue in the traditional culture of medical training and practice that may deter clinicians from more aggressive treatment of tobacco use is the emphasis in medical school curricula on diagnosing and treating illness, rather than prevention. Furthermore, the curricular content can vary by training program (eg, physicians, nurses, Certified Alcohol/Drug Abuse Counselor [CADC], etc.). The training requirements common to all residency programs do not specify any curricular content for tobacco use, its implications, or training in tobacco treatment.[12,13] Clinical specialties, such as oncology, do not typically include structured training in the adverse health effects of tobacco or methods to mitigate those risks. For example, the milestones for advanced residents (fellows) training in hematology-oncology do not require competence in the recognition or treatment of tobacco use disorders,[14] even though one-third of all cancers are caused by smoking. In cancer care, a lack of training or education is predictive of not assisting patients with a quit attempt or discussing medication options.[9]

In certain treatment settings, tobacco use has not traditionally been a priority. For instance, while several behavioral health and substance use treatment programs have begun adopting tobacco treatment protocols, many still do not address tobacco use[15–18] despite the high prevalence of tobacco use in these individuals.[19–21] As highlighted in Vignette 3, smoking may actually be perceived as facilitating social connections among patients engaged in treatment for substance use disorders or as a helpful coping strategy.

Changing national training programs and accreditation standards for a variety of health care providers would facilitate the implementation and dissemination of evidence-based smoking treatment. For example, a recent study evaluated a multimodal, interactive teaching module on tobacco treatment as part of a 6-week cardiovascular course for fourth-year undergraduate medical students.[22] Results demonstrated a sustained learning outcome at 6 months in terms of knowledge, skills, and attitudes with respect to tobacco treatment counseling when compared with a historical control group. Another study found that a 2-day continuing education programs targeting behavioral health professionals significantly increased tobacco use disorder interventions among clinicians and quit attempts among their patients.[23] These types of educational modules could be implemented in training programs for medical students, residents, dental

students, other clinical trainees, and continuing education programs for a variety of already established providers. Training can help providers understand the role they can play in helping their patients quit and provide clinicians with the confidence and skills to provide tobacco treatment intervention.

Providers may wish to educate themselves on the specific epidemiology of tobacco use and treatment considerations among their target population, particularly regarding any contradictions of pharmacotherapy use in individuals with specific comorbidities. There are data to suggest that there is an association between tobacco use and suboptimal disease-specific treatment response, as well as data on the potential effect of comorbid disease on the ability to quit tobacco use, that may be of interest to the provider.[11] Evidence-based treatments have been tested on a variety of populations and have been shown to be effective,[2] and providers can deliver tobacco treatment that is medically appropriate to their patients. There is limited evidence for the use of tailored treatments among patients with comorbid conditions, but providers engaged in counseling interventions should consider the patients' comorbid condition as it relates to the key components of providing support and problem-solving.[2]

Misunderstanding Among Clinicians About the Effectiveness of Tobacco Treatment

Clinicians may perceive that the methods available to treat tobacco use are not helpful or become discouraged by the fact that so few of their patients are able to quit smoking. However, the 2008 US Public Health Service (PHS) Guideline clearly summarizes the evidence that either structured counseling or pharmacotherapy significantly increase cessation above and beyond "cold turkey" approaches, and when provided together the abstinence rate nearly doubles.[2] Therefore, to give patients the highest chance of quitting, patients need the optimal treatment. However, a study evaluating tobacco treatment relative to other chronic diseases found that only 4.4% of outpatient visits by smokers result in a prescription for a medication to treat tobacco use disorder.[24] Furthermore, the odds of a smoker receiving a prescription for smoking were 16–32 times less than the odds of medications being issued for patients with other chronic diseases such as hypertension, diabetes, hyperlipidemia, asthma, and depression.[24] Individuals with these other medical conditions were also more likely to receive behavioral counseling for their medical condition than individuals who smoke were for receiving treatment for tobacco use. A chronic disease management model is the most appropriate for characterizing the nature of tobacco use disorder, and providers cannot become discouraged when treating this chronic disease.[2] Clinicians would not stop treating hypertension or depression if the condition did not improve following the first course of treatment, and providers need to view tobacco use disorder in the same light.

There is also misinformation regarding the safety or usefulness of evidence-based tobacco treatment approaches within some health care settings. For example, in Vignette 2, the surgeon was reluctant to prescribe nicotine replacement for fear of impaired wound healing. As a result, the patient resumed smoking after discharge from the hospital. Though research has established the relationship between smoking and poor postoperative wound healing,[25] no data have suggested a contribution of nicotine alone to wound healing complications or that NRT impairs wound healing, especially considering the low nicotine levels produced by nicotine replacement products compared with smoking or tobacco use. In parallel with Vignette 2, patients who continue smoking rather than using nicotine replacement continue to be exposed to a much broader spectrum of toxic chemicals and carcinogens than nicotine alone.[26] Combined with the adverse effects of smoking with no clear evidence for the adverse effects of nicotine replacement, the rationale for continued smoking over nicotine replacement is unsubstantiated. In Vignette 2, had Mr Jones's surgeon considered the known adverse effects of continued smoking versus the lack of evidence of adverse effect from nicotine replacement, Mr Jones may have had a better opportunity for a successful quit attempt.

Tobacco treatment specialists and tobacco control experts can facilitate education of clinicians, staff, and administrators on the availability and effectiveness of structured tobacco treatment through traditional outreach strategies such as contacting providers or clinical departments, institutional lectures or grand rounds, best practice advisory training, webinars, and printed media. However, this would need to be paired with efforts to change policy requiring tobacco assessment and the provision of evidence-based treatment to be highly effective.[18]

Lack of Therapeutic Support from Clinical Staff

In some settings, the clinical staff may have beliefs and behaviors that support ongoing smoking among their patients.[27,28] For example, in psychiatric and addiction treatment settings, patients often take "smoke breaks" between individual or group treatment sessions.[29] Furthermore, some clinical staff actively discourage smoking cessation among their patients due to the fear that quitting smoking may cause their patients to experience exacerbation of their psychiatric symptoms or relapse to other drugs.[27] In Vignette 1, a health professional actively encouraged continued smoking with the false belief that it could combat the worsening symptoms of depression. In Vignette 3, an intensive substance abuse program did not consider tobacco treatment clinically important to address, and suffered from potential clinician bias since the counselor was a current smoker. However, most studies show that quitting smoking does not negatively impact and may even improve mental health, including reduced depression, anxiety, stress, mood, and quality of life.[30] Recent reviews report an improvement in depressive symptoms as result of quitting smoking similar in magnitude to that of using an antidepressant medication, and others support improved abstinence from illicit drugs and alcohol.[31–37] Clinical staff in both the medical and substance use treatment settings may themselves be smokers or smoke in the same designated smoking areas with their patients.[38–40] A recent meta-analysis suggested that nurses who smoke were 13% less likely to advise their patients to quit.[40] To be effective in treating tobacco use, it is important that the entire treatment team view smoking cessation as an important health goal that is compatible with treatment and one that promotes better outcomes across a spectrum of comorbid conditions.

In clinical settings where care providers actively smoke, there may be reticence to incorporate tobacco treatment into clinical care.[28,39,41] In cases in which clinicians are actively smoking, they should be offered tobacco treatment both for their own personal health benefit as well as potentially to assist with cessation efforts in the clinical setting where they work. Adopting a cohesive policy of providing smoke-free facilities, supporting tobacco treatment among staff, and tobacco treatment as a standard of clinical care for all patients who smoke should be advocated by institutional leadership as well as with all members of a clinical management team.

Insufficient Use of Health Information Technology to Improve Tobacco Use Disorder Identification and Treatment

Smoking status has been deemed so clinically important that it is considered a vital sign and is available for documentation in most, if not all, electronic medical record (EMR) software platforms.[42,43] The increased use of EMRs in the last decade holds substantial promise to improve the identification and treatment of patients who report smoking. Multiple quality measures from the Centers for Medicare and Medicaid Services and the Joint Commission have pushed institutions to improve tobacco use disorder screening and treatment.[44] The meaningful use provisions of the Health Information Technology for Economic and Clinical Health (HITECH) Act have made tobacco identification a mandatory field in EMRs in order to get government rewards initially, followed by penalties for noncompliance.[45] However, while most EMR-related tobacco fields and functions address the identification of patients who smoke, inadequate attention has been given to providing tobacco treatment assistance and follow-up. Several groups have designed and implemented direct referrals to state quitlines as an embedded feature in the EMR.[46] Another group embedded a prompt linked to a tobacco order set in an inpatient EMR, resulting in markedly improved rates of prescribing, quitline referral, and populating the problem list with "tobacco use disorder."[47]

Even if providers acknowledge the importance of treating tobacco use in their patients the clinic workflow system might not support such treatment. Unlike other chronic diseases such as hypertension or hyperlipidemia, where treatment is offered to all with the disease and patients may "opt out" or decline treatment if they choose, tobacco treatment usually follows an "opt-in" model.[48] Many providers will ask patients if they are interested in quitting smoking, and assistance is only offered to those who state they are ready to quit, despite the fact that the PHS Guideline[2] recommends motivational interventions for smokers who are not ready to quit. An analysis of nearly 12 000 cancer patients screened for tobacco use with over 2700 patients automatically referred to a dedicated treatment program using an "opt-out" approach demonstrates that over 90% of patients contacted by the treatment program were interested in participating,[49] a finding that has been replicated in another study.[50]

Modification of systems to incorporate smoking treatment referrals for all patients would further reduce the time needed by the primary provider.[48,49] In Vignette 2, a trained tobacco treatment specialist provided counseling and recommendations for evidence-based pharmacotherapy. Though the surgeon did not support that treatment recommendation, the system of automatic referral to dedicated tobacco treatment resources reflects an efficient design. Research efforts for dissemination and implementation are currently underway by investigators in several clinical specialties to better understand how to disseminate evidence-based tobacco treatment to more people and patients in different settings.[51] However, there are currently few studies elucidating the mechanisms to disseminate evidence-based tobacco assessment and treatment in patients with comorbid conditions. The authors are unaware of convincing data specifically illustrating how to optimize clinically efficient evidence-based tobacco treatment in comorbid condition management, although there are some data supporting existing approaches that can minimize time requirements. Results of a study that screened cancer patients using a structured questionnaire demonstrated that three brief questions captured over 98% of patients who needed referral for tobacco treatment.[49] In that study, analysis of patients referred to the tobacco treatment program demonstrated that asking about tobacco use no more frequently than once per month resulted in a delay of referral to tobacco treatment in less than 1% of patients, supporting that questions do not need to be repeated more frequently for patients who return for repeated medical visits. Efficient clinical design including optimizing the referral strategy could substantially reduce effort by support staff and clinicians in connecting patients to evidence-based tobacco treatment.

A clear systems-based approach to treating tobacco user, in which staff workflows are reconfigured to include ongoing emphasis on treating patients who smoke could create more durable change. Continued development of alerts to facilitate referrals will allow EMRs to reach their full potential to help health care providers and systems treat all patients who smoke.[52] One example of optimizing the EMR to facilitate treatment would be to develop bidirectional linkage that allows for EMRs to directly link to a quitline referral and for patient-level data from the quitline to be transferred back to the referral source. This solution requires careful consideration of patient privacy protection, but facilitates use of existing resources to deliver care. Further, advances in EMR technology to use "smartforms" that provide the ability to track the amount of tobacco used over time and associations with other health conditions will increasingly facilitate communication across clinical care. Cross-linking tobacco treatment visits with other clinical visits for management of other conditions will facilitate ease of care received by patients. However, full utilization of EMRs for tobacco assessment *and* treatment needs to be recognized and supported by administrators, clinicians, and tobacco treatment specialists. Proactive identification of patients who smoke in a health care system using electronic and telephonic outreach, including the use of professional or even interactive voice recorders, can increase patient access and engagement.[51]

Limited Time and Reimbursement for Clinicians to Provide Tobacco Treatment

A Cochrane review found that more comprehensive coverage of tobacco treatment is associated with higher quit attempt and successful cessation rates.[53] In the past, health insurance coverage for tobacco treatment varied widely by state. Both providers and patients were often under-informed about the extent of coverage; because of this, many smokers were untreated or undertreated.[54–56] However, the extent of coverage has improved dramatically for new plans since the 2010 passage of the Patient Protection and Affordable Care Act (ACA).[57] The ACA mandates that all health insurance plans cover some level of tobacco treatment. While this is a major change, the net result has yet to be seen regarding how these policies translate into effective coverage by insurers without explicit or implicit (hidden) barriers or requirements for payment. An example of an implicit barrier is the requirement that patients in Veterans Administration hospitals must have been unable to quit smoking using nicotine replacement therapy or bupropion before being offered access to a more costly agent (ie, varenicline).[58] Another example is when insurers or plan administrators create deliberate obstacles, in order to minimize net payment, by discouraging practitioners from using the benefit (eg, requiring practitioners to file "medical necessity" documents or calling a pharmacy line for pre-approval after the first dispensed prescription on a Medicaid or Medicare plan). Furthermore, the provisions of the ACA result in differences in coverage comprehensiveness based on Medicaid eligibility category and the state where the patient resides (ie, ACA expansion vs. nonexpansion state),[59] adding to confusion for both providers and patients on what services

are reimbursable and to what level. In states that have approved increased premiums for patients who smoke, as is allowed under the ACA, patients might not disclose smoking status and/or remain uninsured due to the higher cost of coverage.[60,61] This is particularly salient for our most vulnerable populations (those with comorbid conditions, lower education, or low socioeconomic status) who are most impacted by price changes.

As was described in Vignette 1, the existence or utilization of tobacco treatment programs can be a barrier in many institutions. One likely explanation for this lack of more widespread creation of tobacco treatment programs is a lack of profitability or financial sustainability under a fee-for-service or bundled-payment model. Under traditional fee-for-service billing, reimbursement for tobacco treatment is nominal. Medicare used to reimburse under the CPT billing codes G0436 and G0437, without any copayment or deductible to the patient.[62] The amount of reimbursement was typically $11–24 per encounter. This may have been a reasonable reimbursement for a clinician who is billing for additional services like primary care or procedures. It is difficult, however, for these rates to sustain a stand-alone outpatient or hospital-based tobacco treatment service without major subsidy from the institution. Currently, clinicians are encouraged to use the next higher CPT code by either the added time involved or increased complexity due to identifying and treating tobacco in a given encounter.

While it may be challenging to bill for smoking treatment, there is a clear financial argument for helping smokers quit. A recent analysis has shown that of 28 evidence-based clinical preventive services evaluated in terms of their cost-effectiveness and clinically preventable burden (measured by quality-adjusted life years saved), the three highest-ranking services were immunizing children, counseling to prevent tobacco initiation among youth, and tobacco-use screening and brief intervention to encourage cessation among adults.[63] One reason for the cost-effectiveness of tobacco treatment is that in the context of chronic disease management, continued smoking can cause significant adverse outcomes.[1,11] For cancer treatment, smoking is associated with increases in overall mortality, cancer-specific mortality, risk for second primary cancer, decrease in treatment response, and is strongly associated with increased cancer treatment toxicity. A formal financial analysis of the differential cost for cancer patients who smoke has not yet been published. However, the high cost of treatment for the adverse effects caused by smoking in cancer patients, such as second-line cancer treatment in patients who fail first-line treatment due to smoking or hospitalization associated with smoking-related toxicity during cancer treatment, far outweighs the cost of providing tobacco treatment to prevent adverse outcomes. Indeed, it is estimated that the most comprehensive tobacco treatment program would cost around $2500 per patient treated, which pales in comparison with the significant added health costs due to continued tobacco use (eg, one additional night in hospital resulting from tobacco-related complications ranges from $3000 to $5000).[64] Clinicians, administrators, and insurers must recognize the importance of preventing expensive complications as equally important as generating revenue from providing evidence-based tobacco treatment.

In the current state of health care, clinicians are intensely busy and under increasing pressure to see more patients, maintain high satisfaction scores, and document thoroughly in EMRs. Time limitations reported by clinicians are predictive of lower rates of provider assistance for tobacco cessation.[9] However, opportunities for tobacco treatment are still possible during the clinical encounter. The practice of "opportunistic" delivery of preventive services,[65] woven into the clinical encounter, is a time-efficient strategy to facilitate clinicians' treatment of patients who smoke. For example, although the doctor in Vignette 1 could not refer Mrs Smith to a tobacco treatment program or thoroughly discuss her smoking with her, the surgeon did advise her to quit and recommended NRT during the encounter. Physicians and other clinicians can frequently generate far more clinical revenue by providing efficient management for other conditions than can be generated with providing tobacco treatment.[66] This can discourage even trained and motivated providers from dedicating enough time to tobacco treatment. Ideally, a provider could apply the five A's approach to tobacco treatment intervention: (1) Ask the patient if he or she uses tobacco, (2) Advise him or her to quit, (3) Assess willingness to make a quit attempt, (4) Assist those who are willing to make a quit attempt, and (5) Arrange for follow-up contact to prevent relapse.[2] If this is not possible due to a resource- or time-constrained environment, adopting a strategy of "Ask, Advise, Refer" (AAR) or "Ask, Advise, Connect" (AAC) among all providers, including referral of patients to a dedicated tobacco treatment program, can increase patient interest and facilitate more effective care.[48,49] Group treatment has also been found to be effective and efficient, allowing for treatment of multiple patients at a time. However, some patients may not want to discuss details of their comorbid condition as it relates to their smoking, and may be reluctant to participate in group sessions.

Summary Considerations for Health Systems to Address Barriers to Tobacco Treatment for Patients Being Treated for Comorbid Conditions

1. In all clinical settings, adopt a policy of asking about tobacco use, advising patients who smoke to quit through use of evidence-based treatment approaches, and either directly assisting patients with quitting tobacco use or referring all patients who use tobacco to existing dedicated tobacco treatment programs. For patients who are not ready to quit smoking, employing motivational approaches and establishing contact with an evidence-based tobacco treatment program will facilitate translation to an effective quit attempt in the future when patients are ready to quit.
2. In environments where tobacco treatment programs exist, but are underutilized, develop an effective, efficient method (eg, via EMR; using an opt-out approach) to identify patients who use tobacco and effectively transfer care for tobacco use to an existing tobacco treatment program. This may be the most highly effective approach in many clinics, but will require active consideration and input from clinicians as well as staff responsible for reception and registration, triage, nursing, social work, administration, information technology, and provision of evidence-based tobacco treatment. Importantly, clinical infrastructure will vary across institutions, thereby necessitating consideration of an individualized and sustainable solution that works with given clinical resources. However, the fundamental principles of identification and treatment or referral should be maintained in all clinical situations. More research is needed for how best to implement such treatment referral systems.
3. In environments where no tobacco treatment programs exist, consider either developing a dedicated treatment program or clinically efficient and effective mechanisms to allow individual providers to deliver evidence-based tobacco treatment.

Table 1. Online Resources and Training Tools

Audience	Resource
Administrators	Systems Change: Treating Tobacco Use and Dependence[67]
	Best Practices for Comprehensive Tobacco Control Programs[68]
	Treating Tobacco Dependence Practice Manual[69]
	Destination Tobacco Free: A Practical Tool for Hospitals and Health Systems[70]
Providers	Treating Tobacco Use and Dependence: 2008 Update[2]
	National Comprehensive Cancer Network Guidelines[71]
	Council for Tobacco Treatment Training Programs[72]
	Wisconsin Nicotine Treatment Integration Project[73]
	DIMENSIONS: Tobacco Free Toolkit for Healthcare Providers[74]
	Rx for Change: Clinician-assisted Tobacco Cessation[75]
	Tobacco Free Nurses[76]

These resources were identified by the authors in January 2018. This is not intended to be a comprehensive list of resources, but rather a starting place for readers. Not all resources are free; some may require membership fees.

As above, incorporating institutional input from all levels of clinical care will facilitate a more effective and sustainable approach.

4. In deciding on a method of providing tobacco treatment, consider the potential income generated through traditional fee-for-service approaches. Also consider the substantial long-term cost savings associated with preventing complications or failures of medical disease management caused by continued smoking.
5. Involve all members of a clinical management team in providing access to tobacco treatment. Though it is not practical to train all clinicians and staff to provide tobacco use treatment, it is feasible to make sure all clinicians and staff are aware of the importance of addressing tobacco and available resources that patients can use to help them quit smoking. Furthermore, make tobacco treatment available for all clinicians or staff who may use tobacco and need assistance with quitting.
6. Consider evaluating methods to increase the efficiency of providing tobacco treatment within a clinical setting. For example, providing tobacco treatment within the same clinic room where the patient receives treatment or consultation for the comorbid condition may slow clinic flow. Physicians who are required to see a set number of patients in a day may not have time to discuss details of tobacco treatment. Therefore, a dedicated non-physician may offer tobacco treatment assistance in the same visit/room once a physician is done meeting with a patient. If clinic space is limited, consideration should be made to identify available space in close proximity to the primary medical clinic. In contrast, some clinical settings, such as substance abuse programs, may have considerable expertise in providing tobacco treatment, but have not capitalized on an efficient method to consistently deliver evidence-based care. Within every clinical setting, engaging in both implementing tobacco treatment and evaluating effectiveness can be used to further refine clinically efficient methods.

In summary, treating tobacco use is the number one way to prevent disease and disability in the United States. We have reviewed systemic barriers to treatment and offered examples of suggestions for changes in training, health care systems, clinical workflow, and payment systems that could enhance the reach and the quality of tobacco treatment within the US health care system. Additional resources, guidelines, and training opportunities directed at both health care systems and treatment providers can be found in Table 1. Although the tobacco treatment research field has done a great deal of work on developing broad-spectrum treatment approaches, future research is needed to evaluate optimal methods for disseminating and implementing these treatments to improve patient reach within the health care setting.

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Declaration of Interests

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