FACTORS AFFECTING THE AVAILABILITY OF EVIDENCE BASED TREATMENTS FOR SMOKING CESSATION SERVICES AT HIV PROGRAMS

by

ROBERT COFFMAN

(Under the Direction of Jessica Muilenburg)

Abstract

Approximately 40-70% of people living with HIV/AIDS (PLWHA) in the US are current smokers. PLWHA who smoke are more susceptible to heart disease, tuberculosis, AIDS-related cancers, and non-AIDS related cancers. They are less likely to be virally suppressed. Additionally, among PLWHA who smoke, smoking takes more years off their life than the virus itself. The purpose of this study is to examine what smoking cessation treatments are being implemented at HIV programs in the US, and what external and organizational factors predict the availability of such services.

The Consolidated Framework for Implementation Research (CFIR) was used as a guide to develop a cross-sectional survey which was emailed to program managers at HIV organizations across the US. The survey assessed the availability of recommended behavioral and medical treatments for smoking cessation, as well as organizational and policy-level constructs. Regression analyses were run to assess these constructs' predictive values for smoking cessation availability.

Less than half (48%) of programs surveyed offered medical treatments. Approximately 61% offered intensive behavioral treatments. In the outer setting of the CFIR, funding from the Ryan White Care Act parts C and D, as well as revenue received from Medicaid managed care were significantly predictive of both total number of medications and intensive behavioral treatments for smoking cessation. In the internal setting, manager openness to the use of evidence based treatments (EBTs) and manager and staff attitudes toward smoking cessation were significant predictors of many behavioral treatments. Future interventions should focus on empowering more Ryan White-funded centers to provide smoking cessation and on developing an organizational culture that is more open to EBTs and that prioritizes smoking cessation for PLWHA.

Index Words: HIV, AIDS, tobacco, smoking, smoking cessation, quitting, pharmacotherapy, consolidated framework for implementation research, CFIR, nicotine replacement therapy, Varenicline, nortriptyline, Bupropion SR, the Five As, motivational interviewing, cognitive behavioral therapy, Ryan White, Medicaid

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ROBERT COFFMAN

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ROBERT COFFMAN

Major Professor: Jessica Muilenburg

Committee: Timothy Heckman

Seock-Ho Kim

Electronic Version Approved:

Ron Walcott

Dean of the Graduate School

The University of Georgia

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Dedicated to my love, Kelly Bird

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Chapter 1 Overview of HIV and Smoking

HIV

Approximately 1.2 million Americans are currently living with HIV, a population that is disproportionately comprised of racial and sexual minority groups(Centers for Disease Control and Prevention, 2016a). Men who have sex with men (MSM) account for 82% of all diagnoses among males, and comprise 67% of all people living with HIV or AIDS (PLWHA) in the US (Centers for Disease Control and Prevention, 2016a). African American MSM account for the largest portion of PLWHA (Centers for Disease Control and Prevention, 2016a). While diagnoses among White gay and bisexual men dropped 18% between 2005 and 2014, they rose among Hispanic and African American gay and bisexual men by 24% and 22%, respectively, during that same time period (Centers for Disease Control and Prevention, 2016a). Similarly, though African Americans and Hispanic/Latinx Americans make up just 12% and 18% of the US population, respectively, they bear the heaviest burden of new HIV diagnoses in the country (Centers for Disease Control and Prevention, 2016a) As of 2015, African Americans represented 45% of *all* new diagnoses in the US while Hispanics and Latinos accounted for 24 percent (Centers for Disease Control and Prevention, 2016a). Eliminating these disparities and controlling the HIV epidemic in the US must begin with addressing the gaps in the HIV care continuum.

The HIV Care Continuum in the United States

Only 86% of the estimated 1.2 million PLWHA in the US in 2011 were diagnosed(Centers for Disease Control and Prevention, 2014). There are approximately 154,000 PLWHA outside the spectrum of HIV care who are not aware of their illness, and may not be taking precautions to prevent the spread of the virus(Centers for Disease Control and Prevention, 2014). Researchers have long emphasized the importance of the “test and treat” strategy in stopping the spread of HIV. If a universal testing strategy for HIV were implemented, within ten years HIV mortality could potentially be reduced to less than one case per 1000, and less than 1% of the population would be HIV positive(Granich, Gilks, Dye, De Cock, & Williams, 2009). This is predicated on immediately linking people to care once they test positive.

However, only 80% of people diagnosed with HIV were linked to care within thirty days of testing positive(Centers for Disease Control and Prevention, 2014). Without linkage to care soon after their diagnosis, PLWH not only pose a greater risk of spreading their virus, but also are more likely to develop AIDS (Gardner, McLees, Steiner, Del Rio, & Burman, 2011).

Engagement and Retention in Care

While important, mere linkage to care is not enough control HIV. After starting treatment, patients must remain in care and follow the necessary steps to manage their HIV. People who are not engaged in care do not have access to the necessary resources, including antiretroviral therapies (ARTs) and clinical support, to achieve and maintain a higher quality of life (Gardner et al., 2011). As with patients that leave the continuum at any other level, those who are not in sustained medical care for HIV are a

risk to spread the virus. Additionally, they have higher mortality rates than PLWHA who are engaged in regular HIV care(Gardner et al., 2011). The CDC considers people to be engaged in care if they have had one HIV medical visit during the past year, and patients are considered to be retained in care if they have had two or more CD4+ viral load tests, three months apart, in the past year. Evidence suggests that one of the largest faults in the HIV continuum of care in the US is that there is very little success in retaining them in care once they have been connected to a provider. Of the 80% of diagnosed PLWHA that are linked to care, only 40% consistently attend treatment(Centers for Disease Control and Prevention, 2014).

Ryan White Care Act

HIV care and services in the US are primarily funded by the Ryan White Care Act. Passed in 1990, the act serves to provide various health care services for PLWHA, and includes social support mechanisms as well. There are five parts of the act, each of which provide funding for different specific aspects of HIV care in the US (Johnson & Heisler, 2015). Part A of the Ryan White Act focuses on funding eligible metropolitan areas (EMAs) and transitional grant areas (TGAs). To be considered an EMA, the area population must be at least 50,000, and there must have been at least 2,000 reported AIDS cases in that area in the past five years(Johnson & Heisler, 2015). TGAs are metropolitan areas with more than 1,000 but less than 2,000 reported AIDS cases in the past five years(Johnson & Heisler, 2015).

Part A accounts for about 28% of Ryan White Act spending(Johnson & Heisler, 2015). The core services provided under this section are mostly medical in nature. Any

area that receives funding under part A of the act must spend 75% of it on core medical services, which include outpatient health services, AIDS Drug Assistance Program (ADAP) treatments, dental care, community-based health services, and mental health and substance abuse treatment services, among others(Johnson & Heisler, 2015). The other 25% of funds are allowed to be spent on support services for PLWHA(Johnson & Heisler, 2015). One provision of this part of the act is that these funds will only be used to pay for services that are not covered by other services, including Medicare, Medicaid, or private health insurance (Johnson & Heisler, 2015). Under this section, EMAs are also required to assemble a council focused on developing plans for HIV health services in the area. By requirement, the ethnic and racial makeup of the council must be similar to that of the HIV epidemic in the area(Johnson & Heisler, 2015).

Part B of the Ryan White Act provides funding for drug treatment, community health care, and support services for low-income PLWHA at the state level(Johnson & Heisler, 2015). The ADAP, which accounts for by far the largest percentage of Ryan White spending (39%), is covered in this section(Johnson & Heisler, 2015). The purpose of the ADAP is to make ARTs accessible to low income PLWHA who would not otherwise be able to afford them(Johnson & Heisler, 2015). It is a crucial element of HIV care in the US. Anywhere from 25% to 60% of PLWHA in the US that are in care use ADAP funds to get their ARTs(Hanna et al., 2013; Johnson & Heisler, 2015). The Ryan White Act distributes funding for ADAP to the states, and each state is allowed to run their program independently(Hanna et al., 2013). If federal funding does not completely match the needs of the state, many states may use money from their general state fund to supplement their ADAP program(Hanna et al., 2013). Because of this, there are

distinct differences in the ways in which various states run their ADAP programs(Hanna et al., 2013). In a comparison of 8,847 individuals newly eligible for ARTs, 58% of the participants who lived in states that contributed extra funding to the ADAP, compared to just 39% of participants who did not(Hanna et al., 2013). People living in states that contributed to ADAP funding also had a greater likelihood of having a suppressed viral load than people living in states without ADAP (59% vs. 51%)(Hanna et al., 2013). The ADAP is clearly a powerful resource for helping curb the HIV epidemic among low income PLWHA, especially in states that contribute additional funding.

Funding from Part C of the Ryan White Act goes to rural communities, and is directed primarily toward early intervention services(Johnson & Heisler, 2015). The types of places that receive Part C funding are generally sites such as family planning clinics, Indian Health Service centers, rural health clinics, and community-based HIV organizations(Johnson & Heisler, 2015). Part D funding is reserved for organizations whose main function is to provide services such as outpatient care and case management for women, infants, children, and adolescents living with HIV(Johnson & Heisler, 2015). Finally, funds from part F, which only accounts for about 3% of Ryan White spending go toward dental care, training on HIV for health care providers, and the Special Projects of National Significance (SPNS) Program, which encourages research in developing new methods of treating HIV(Johnson & Heisler, 2015).

ARTs and Viral Suppression

Adherence to ART regimens after prescription is crucial. To successfully suppress their viral load, a patient must have an adherence rate of at least 95% to their ARTs(Paterson et al., 2000). If used correctly, ARTs can be highly effective. In an opt-

out study among prisoners, 99% of participants who tested positive for HIV were to care within ninety days(Lucas et al., 2016). Approximately 93% of prisoners who had CD4+ cell counts less than 350 and 90% of those who had CD4+ cell counts of greater than 350 initiated ART (Lucas et al., 2016). At the follow-up, 98% of the participants who had initiated ART and remained in prison were still adherent, and 88% of them had achieved viral suppression(Lucas et al., 2016). In some cases, scaling up of ART has led to a 96% reduction in risk of spreading the virus among serodiscordant couples, and in areas where ART coverage is high, HIV-uninfected individuals are less likely to contract the virus than in areas where ART coverage is low(Tanser, Barnighausen, Grapsa, Zaidi, & Newell, 2013). Emphasizing the importance of ART use and adherence not only reduces the risk of progression to AIDS in PLWH but also prevents the spread of HIV.

Smoking

The failure to get the majority of PLWHA to consistently adhere to ART regimens is further compounded by the fact that they often are dealing with multiple comorbid health issues. A disproportionate percentage of the population of PLWHA in the US are tobacco users. Currently, tobacco use is the leading cause of preventable death in the United States, and is responsible for over 480,000 deaths per year(Centers for Disease Control and Prevention, 2016b). It is a root cause for many different forms of cancer, including lung, liver, colorectal, and pancreatic (Office of the Surgeon General, 2014). Additionally, it is linked to other chronic and potentially fatal diseases such as stroke, coronary heart disease, diabetes, pneumonia, chronic obstructive pulmonary disease (COPD), asthma, and tuberculosis, among others (Office of the Surgeon General,

2014). As of 2012, approximately 18% of adults in the US were current smokers(Office of the Surgeon General, 2014)

HIV and smoking

While great strides have been made in curbing the smoking rate among the general population in the US, PLWHA still struggle greatly with tobacco dependence. It is estimated that anywhere from 40-70% of PLWHA are current smokers, nearly two to three times higher than the rate among the general population (Helleberg et al., 2013; Lifson & Lando, 2012). Aside from the previously discussed effects of smoking, PLWHA who smoke face a litany of additional health issues.

HIV destroys the body's CD4 cell count. These cells, also known as T blood cells, are part of the immune system and are responsible for fighting off infectious diseases (Centers for Disease Control and Prevention, 2015b). Thus, PLWHA are at risk for many non-AIDS related illnesses, and smoking only exacerbates these problems. PLWHA who smoke are more likely than nonsmoking PLWHA to contract thrush, hairy leukoplakia, and pneumonia(US Department of Health and Human Services, 2014). They are also more susceptible to heart disease and stroke, COPD, and various forms of cancer(US Department of Health and Human Services, 2014). Between 1991 and 2005, the amount of AIDS-related cancers in the US decreased threefold, while the amount of non-AIDS related cancers among PLWHA *increased* threefold during that same time (Shiels et al., 2011). Notably, there was a sharp increase in lung cancer among PLWHA during this time period(Shiels et al., 2011). There were also increases in anal, liver, and prostate cancers, all of which have been associated with HIV and smoking (Shiels et al., 2011). Among PLWHA who smoke,

smoking may actually be responsible for more life-years lost than the virus itself(Helleberg et al., 2013).

This is compounded by the fact that quit rates are low among PLWHA who smoke (Zyambo et al., 2019). Quit rates in this population are typically around 16 to 32%, which is approximately half that of smokers who do not have HIV/AIDS (Mdodo et al., 2015; Schafer et al., 2015; Zyambo et al., 2019). Smoking reduces the effectiveness of anti-retroviral therapies (ARTs) (Miguez-Burbano et al., 2003). Likely because of this, PLWHA who smoke are less likely to be virally suppressed than their nonsmoking counterparts (Gamarel et al., 2018; Hile, Feldman, Alexy, & Irvine, 2016; Zyambo et al., 2019). Additionally, their CD4 counts are lower(Hile et al., 2016).

Compared to smoking among the general population, there has been very little research conducted on effective treatments for smoking among PLWHA. PLWHA who smoke are interested in quitting and would be willing to take advantage of cessation treatment service (Mamary, Bahrs, & Martinez, 2002; Pacek & Cioe, 2015; Pacek, Latkin, Crum, Stuart, & Knowlton, 2014b). PLWHA who smoke are more likely to quit when they have HIV care providers who encourage them to do so (Berg, Nehl, Wang, Ding, He, Johnson, et al., 2014). However, evidence suggests that HIV providers are less likely than non-HIV providers to ask about smoking or encourage patients to quit(Duval et al., 2008; Tesoriero, Gieryic, Carrascal, & Lavigne, 2010) Thus there is a clear need for both clinical trials and implementation research focused on developing quality tobacco cessation programs tailored to the needs of PLWHA.

Statement of Purpose

While researchers have investigated the effectiveness of smoking cessation interventions tailored to PLWHA, there is very little information about the factors that

influence whether HIV clinics offer smoking cessation treatments for their patients. There is significant evidence that EBTs for smoking cessation improve chances of quitting. Thus, the purpose of this study is to gauge the prevalence of evidence-based smoking cessation treatments at HIV-specific programs in the US, and the related political, structural, and community-level environmental factors that influence whether or not they provide such services. This information could aid in identifying various factors that predict whether or not clinics offer smoking cessation and will allow researchers to develop interventions that are more feasible to implement.

Research Question(s)

With this research, I aim to answer the following questions:

1. To what extent are HIV clinics across the country offering any evidence-based smoking cessation services to their clients?
2. What are the external and clinic-level factors that impact successful offering of smoking cessation services?
    a. External factors: Medicaid/Medicare and Ryan White funding, reimbursement, patient needs and resources.
    b. Clinic-level factors: organizational characteristics, attitudes toward smoking cessation, co-worker attitudes toward smoking cessation treatment, training provided for smoking cessation, resources provided to counselors for smoking cessation, clinic employee smoking culture

Chapter 2 Literature review

Overview

Among PLWHA, tobacco use remains an urgent issue. The smoking rate is between 40-70%, compared to only approximately 19% among the general population in the US (Centers for Disease Control and Prevention, 2016b; Helleberg et al., 2013; Lifson & Lando, 2012; Pacek, Latkin, Crum, Stuart, & Knowlton, 2014a). Little is known about how characteristics of HIV-specific programs predict implementation of smoking cessation programs for PLWHA. Thus, the purpose of this study is to identify factors that relate to implementation of smoking cessation services in clinics. To do so, it is first necessary to understand current recommendations for smoking cessation.

Tobacco Use as a Chronic Illness

Tobacco use damages nearly every organ in the body and displays many of the signs of a traditional chronic illness (Hudson & Mannino, 2010). Mortality rates from tobacco use are highly similar to those of other chronic diseases, such as diabetes mellitus and heart disease (Hudson & Mannino, 2010). Furthermore, there is evidence that suggests that predisposition to nicotine addiction is potentially genetic (Hudson & Mannino, 2010; Khurana, Batra, Patkar, & Leone, 2003). Thus, there is merit to the idea

that tobacco addiction is a chronic disease, and that treating it as such can be more productive in helping current smokers change their lifestyles. Often, tobacco use is seen as a dichotomous “current smoker” or “abstinent” state. However, the reality is that most smokers will go through long periods of smoking during which they may have periods of abstinence(Bernstein & Toll, 2019). Consequently, addressing tobacco use as a chronic illness could help physicians recognize that it is a chronic condition that is not easily stopped, and must be continually addressed because relapse is common (Bernstein & Toll, 2019; Khurana et al., 2003).

Approximately 70% of current smokers in the US report that they want to quit (Fiore, 2008). However, of the smokers who reported attempting to quit in 2005, only 4 to 7% were successful. While that number may be low, approaching tobacco use from the chronic disease model may help physicians understand that a relapse is a common occurrence on the road to complete tobacco cessation rather than a failure on their own part (Khurana et al., 2003). This could help them provide more realistic long term goals for their patients(Khurana et al., 2003). In the US Guideline on Treating Tobacco Use and Dependence, Fiore et al (Fiore, 2008) recommend treating tobacco dependence as a chronic disease as this approach emphasizes the idea that tobacco cessation treatment is a continuing process involving ongoing patient education and counseling.

Smoking Cessation Care in Health Clinics

While the recommendation is to treat smoking and tobacco use as a chronic illness, this does not appear to be taking hold. As many as 70% of all smokers visit a doctor or health clinic each year (Fiore, 2008). Thus, physicians, nurses, dentists, and clinicians are in a unique position to help people successfully quit smoking (Fiore,

2008). Because of this, it is recommended that patients be screened every time they attend a medical appointment (Fiore, 2008). While about 63% of doctor's visits in the US included a tobacco screening between 2005 and 2010, only 20.9% of patients who reported being tobacco users received any counseling related to their addiction (Jamal, Dube, & King, 2015). Brief advice to quit smoking is ideal in a clinical setting, because often health care workers have fifteen or fewer minutes to spend with their patients (Fiore, 2008). Additionally, this method has a positive effect on smoking cessation among patients while also being affordable for the clinic (West et al., 2015).

Behavioral Treatments for smoking cessation

The 5 A's of Smoking Cessation

The US Public Health Guidelines recommend that physicians and health care workers use the 5 A's approach to smoking cessation at every visit(Fiore, 2008). This process involves first asking the patient whether or not they smoke and documenting their response(Fiore, 2008). If the patient reports being a current smoker, the next step is to then give them personalized advice to quit. The health care worker should emphasize the importance of quitting while identifying their personal reason for doing so(Fiore, 2008). Next, they should assess the patient's willingness to quit. If they express an interest in making a quit attempt, the health care provider should then begin to assist them in quitting. This involves multiple steps (Fiore, 2008). First, they should work with the patient to develop a personalized quit plan. This includes setting a quit date, which should occur within the following two weeks, alerting their family and friends of their quit attempt so they might garner more support in their efforts, anticipating

potential barriers to cessation, and removing all tobacco products and temptations from their environment (Fiore, 2008).

In the Assist phase, care providers should recommend use of smoking cessation medication if it is medically viable, and provide practical counseling that helps them hone their skills and develop their problem-solving abilities (Fiore, 2008). During this time, they should be sure to connect patients with other smoking cessation aids, such as local nonprofits, health departments or quit-lines(Fiore, 2008). Simply connecting a patient with a quit-line can improve their odds of both quitting smoking and remaining abstinent (Zhu et al., 2002).

The final step in the Five A's process is to arrange for follow-up visits. Because tobacco dependence is a chronic condition, it is imperative that health care workers, whether they are physicians, nurses, dentists, or any other type of clinic employee continue to follow-up with the patient. Fiore (2008)recommend that the first follow-up contact occur within the first week after the quit date, and that the second one occur within the first month. In these follow-ups, healthcare workers should identify problems the patient has dealt with and help them devise plans to approach these issues should they recur (Fiore, 2008).

Counseling and Behavioral Therapies

Motivational Interviewing

In addition to the Five A's and first-line medications, clinicians often use behavioral therapies for smoking cessation. One such technique is Motivational Interviewing (MI). The crux of MI therapy is that clinicians who use it attempt to help the client develop motivation from within(Fiore, 2008). MI is founded on four key principles:

Express empathy, Develop Discrepancy, Roll with Resistance, and Support Self-efficacy (Fiore, 2008). Clinicians who practice MI use open-ended questions and reflective listening to determine patients' values concerning tobacco use, then they emphasize to them the difference between their expressed values and their current behavior. When they sense that clients are getting defensive or resisting the change, MI practitioners back off and help them reflect on why that might be. Finally, they also help the patient recognize their past successes and use those to develop their self-efficacy in regards to quitting (Fiore, 2008).

In order to enhance motivation, clinicians may use the "5 R's." The first step is to help the patient identify the personal relevance of quitting tobacco. Once a person has determined how tobacco cessation may be meaningful in their life, they are more apt to commit to quitting (Fiore, 2008). Next, the clinician has the patient identify the risks of tobacco use, both acute and long term, as well as its effect on others(Fiore, 2008). In addition to identifying the risks, it is critical to help the patient determine the potential benefits of quitting smoking. As with any behavior change, there are potential barriers that may inhibit people from quitting tobacco. Thus, an important part of the clinician's job in using this technique is to help the patient enumerate the potential roadblocks preventing them from successfully quitting (Fiore, 2008).The final step in this process is repetition. Every time an unmotivated patient sees the clinician, the intervention should be re-implemented (Fiore, 2008).

CBT

While MI is effective at increasing motivation for tobacco users with low motivation to quit, the evidence on whether it works for people who are already

motivated to quit is unclear (Fiore, 2008). Therapies that focus on problem solving and skill building are recommended for use in tobacco cessation as well (Fiore, 2008). One popular form of this therapy is Cognitive Behavioral therapy (CBT). The central premise of CBT is that dysfunctional thinking is at the root of most psychological disorders (Beck & Beck, 2011). With the goal of creating long lasting behavioral and cognitive changes, CBT therapists attempt to alter their clients' negative thinking by using structured sessions to help them develop problem solving skills and change their basic belief systems (Beck & Beck, 2011).

While initially developed to treat depression, CBT has also been used in treatment of substance use disorders and tobacco cessation, with mixed results. A culturally tailored CBT intervention targeted at African American smokers showed moderate effectiveness compared to usual care (Webb Hooper, Antoni, Okuyemi, Dietz, & Resnicow, 2017). Similarly, CBT interventions targeted toward elderly populations and populations of smokers hospitalized for psychiatric conditions have produced elevated abstinence rates in relation to control groups (Barnett, Wong, Jeffers, Hall, & Prochaska, 2015; Barnett et al., 2014). These interventions are also highly cost effective for clients(Barnett et al., 2015; Barnett et al., 2014). CBT may potentially be useful for PLWHA, as there is considerable overlap between people within this population and people diagnosed with psychiatric disorders (Blank et al., 2014; Chander, Himelhoch, & Moore, 2006).

Quitlines

Another potential option for tobacco cessation is a telephone-based smoking cessation service or quitline (Centers for Disease Control and Prevention, 2004). There are two types: reactive and proactive (Centers for Disease Control and Prevention, 2004). In reactive quitlines, counselors provide immediate help when a tobacco user calls the hotline, but do not take any further action (Centers for Disease Control and Prevention, 2004). Proactive quitlines, on the other hand, generally involve counselors making multiple follow-up calls after the tobacco user's initial call (Centers for Disease Control and Prevention, 2004). These have been studied at much greater length than reactive lines (Centers for Disease Control and Prevention, 2004). They are useful tools in smoking cessation, especially when used for multiple sessions in conjunction with NRTs (Centers for Disease Control and Prevention, 2004; Hollis et al., 2007). Traditionally, quitlines are state-run, and as of 2019, all 50 states in the US had one, of which 47 were funded through the CDC (Centers for Disease Control and Prevention, 2019).

Gritz et al. (2013) examined the use of a proactive cell phone-based smoking cessation intervention specifically for PLWHA. Participants in the Usual Care (UC) group received written tips for quitting and instructions on how to obtain NRTs, while participants in the intervention group were given eleven proactive counseling calls over a three month period in addition to the materials that the UC group were given (Gritz et al., 2013; Vidrine, Marks, Arduino, & Gritz, 2012). By the 12 month follow-up, participants in the intervention group were 2.41 times more likely to be abstinent than participants in the UC group(Gritz et al., 2013). This suggests that quitlines may be an

especially effective mode of delivering tobacco cessation to PLWHA, as it greatly facilitates their ability to access care.

Nicotine Replacement Therapies

While behavioral therapies can be effective in eliciting quit attempts among smokers, medications and nicotine replacement therapies (NRTs) also play a vital role in aiding smoking cessation. Fiore (2008) describes seven “first line” medications for treating tobacco dependence: Bupropion SR (Sustained Release), nicotine gum, nicotine inhaler, nicotine lozenge, nicotine nasal spray, nicotine patch, and varenicline.

NRTs, which include nicotine gum, nicotine inhalers, nicotine lozenges, nicotine nasal spray, and nicotine patches give patients low doses of nicotine to wean them off of their addiction. A review of 150 trials studying the effectiveness of NRTs for smoking cessation found that, in general, they increased quit rates by 50 to 70% (Stead et al., 2012). NRTs can be effective regardless of the amount of clinical support provided (Stead et al., 2012)

Nicotine gum is available as an over the counter smoking cessation aid and comes in either a two or four milligram dose. It can increase the odds of quitting about 1.5 times compared to placebo (Stead et al., 2012).

Nicotine inhalers are available only by prescription and function by inserting nicotine in the back of the throat near the base of the tongue (Fiore, 2008). In studies where inhalers were the main form of NRT used, they nearly doubled the odds of quitting compared to the placebo group (Stead et al., 2012). As with nicotine gum, nicotine lozenges are available over the counter in two and four milligram dosages. Nicotine lozenges increase the rates of quitting by about 1.9 versus the placebo (Stead

et al., 2012). However, the higher dosage nearly triples the odds of abstinence at six months post quit date (Fiore, 2008). Nicotine nasal spray, another prescription NRT, more than doubles quit rates (Stead et al., 2012). The last NRT that is considered a first-line medication is the nicotine patch. It is available over the counter or by prescription for a stronger dose (Fiore, 2008). Nicotine patch usage increases quitting odds by a factor of 1.64 (Stead et al., 2012). It also appears to be helpful when patients use it before beginning their quit attempts, as it decreases smoking behaviors (Stead et al., 2012).

One concern that patients often harbor when considering using NRTs is that, because these treatments are still administering nicotine into their system they may continue to be addicted to it. However, very few people develop dependence on NRTs (Stead et al., 2012). They may also be used in combination with other smoking cessation medications. Use of the nicotine patch in combination with other NRTs or bupropion SR has been shown to increase smoking cessation rates (Fiore, 2008).

Prescription Medications for Smoking Cessation

Two of the five recommended first-line medications are prescription medications. Varenicline, better known by its brand name Chantix, is a prescription medication developed specifically for smoking cessation (Fiore, 2008). It is available in doses of either one or two milligrams (Fiore, 2008). While evidence suggests that varenicline is more effective than bupropion in promoting smoking cessation, it has drawbacks as well (Hughes, Stead, Hartmann-Boyce, Cahill, & Lancaster, 2014). Unlike bupropion SR and NRTs, varenicline cannot be used in combination with other NRTs due to its status as a nicotine antagonist (Fiore, 2008).

Bupropion SR is a prescription antidepressant, but also has value as a smoking cessation aid. A systematic review of 44 trials that studied the viability of bupropion SR as a single pharmacotherapy treatment found considerable evidence that the medication is a very effective tool for smoking cessation (Hughes et al., 2014). Bupropion increased the odds of long term abstinence by a factor of 1.5 to 1.8 compared to standard care (Hughes et al., 2014).

Combined behavioral and medication therapy

While both first-line medications and behavioral therapies for tobacco dependence can be effective on their own in promoting quitting, they have also been combined, with successful results. Patnode et al. (2015) found that smoking cessation treatments that used either an NRT or bupropion together with a behavioral therapy nearly doubled the odds of abstinence at six months post quit date compared to control groups. Stead, Koilpillai, Fanshawe, and Lancaster (2016) found a similar difference between patients being administered both behavioral treatment and pharmacotherapy. There may be a slight advantage to using both, as opposed to only medication (Stead et al., 2016).

Smoking Cessation and ARTs

In treating smoking among PLWHA, one issue is the potential that NRTs or prescription medications for smoking cessation may potentially interfere with patients' ARTs. The limited research in this area suggests that there is little cause for concern. PLWHA who take either varenicline or NRTs and are on ARTs experience adverse events at the same rate as those who are not on ARTs (Ferketich et al., 2013).

Interventions on HIV/Smoking

Recently, studies have emerged that focus on the efficacy and effectiveness of smoking cessation interventions for PLWHA in the US. A 2016 meta-analysis found that, for the most part, interventions aimed at HIV-positive smokers have not been very successful with regards to long-term abstinence (Pool, Dogar, Lindsay, Weatherburn, & Siddiqi, 2016). While this may be true, it is important to understand how these programs were implemented and what aspects were effective, in order to improve future treatment.

Group Interventions

Only two of the reviewed studies focused on the use of group therapy as a form of smoking cessation treatment. Despite limited data, this method shows promise as it is both relatively effective and acceptable among HIV-positive smokers, as HIV positive smokers who took part in an intensive group therapy intervention were almost twice as likely to be abstinent at three months post quit date than those who only received standard care (Moadel et al., 2012). Marhefka et al. (2018) found that an internet-based video group therapy treatment for HIV positive smokers increased both short term and long-term abstinence. Another intervention, aimed specifically at HIV-positive African American men who smoke found that participants had high levels of satisfaction with the program, and high readiness to quit. The short term quit rate was 24%, though that dropped to 10% at three months post quit date (Matthews, Conrad, Kuhns, Vargas, & King, 2013).

Motivation

Eleven of the studies reviewed used motivation to quit smoking as a direct outcome measure. Three of these studies were interventions that focused specifically on the use of motivational interviewing as the basis for smoking cessation treatment (Ingersoll, Cropsey, & Heckman, 2009; Lloyd-Richardson et al., 2009; Manuel, Lum, Hengl, & Sorensen, 2013). Motivational Interviewing (MI) is a form of therapy that was developed in the 1980s as a way of treating substance use (Miller & Rose, 2009). Practitioners of MI use interviewing to coax patients into talking about changing their problem behaviors and empowering them to make behavior changes (Miller & Rose, 2009).

Ingersoll et al. (2009) studied the effectiveness of using a combination of MI and Nicotine Replacement Therapy (NRT) to treat smoking in an HIV-positive population. They recruited a small sample (40 participants) for a randomized control trial (Ingersoll et al., 2009). After qualifying for the study patients were randomized to either the "MI+Patch" group or the "Self-Guided Reading +Patch" group (Ingersoll et al., 2009). Participants in the "MI+Patch" group met once with a counselor and were given a motivational interviewing intervention as well as a prescription for nicotine patches (Ingersoll et al., 2009). Those in the "Self-Guided+Patch" group received a booklet from the National Cancer Institute as well as a prescription for nicotine patches (Ingersoll et al., 2009). Both groups were asked to set a quit date and reported back for follow-up visits at one and three months post completion. In the end, the authors found no statistically significant difference in outcomes between the two groups, but found that in

the overall sample, participants had reduced smoking by half a pack per day while 225 were abstinent at the three month follow-up (Ingersoll et al., 2009).

Lloyd-Richardson et al. (2009) conducted a very similar study. As in the Ingersoll et al. (2009) study, they examined the combination of Motivationally Enhanced (ME) treatment and NRTs (Lloyd-Richardson et al., 2009). Where Ingersoll et al. (2009) had a very small sample size, Lloyd-Richardson et al. (2009)recruited 444 participants to their study. Participants had follow-up appointments at two, four, and six months after completion. Again, there was no statistically significant difference between the treatment and control groups (Lloyd-Richardson et al., 2009).

Manuel et al. (2013) explored the use of motivational interviewing in a sample of female HIV-positive smokers, but without the addition of NRTs. This randomized control trial compared an MI group or the Prescribed Advice (PA) group (Manuel et al., 2013). Participants in the MI group received a counseling session and were then referred to an NRT program at a hospital, whereas participants in the PA group were simply given advice to quit (Manuel et al., 2013). There were no significant differences between the intervention in control when it came abstinence, but those in the MI group did significantly decrease their mean cigarettes smoked per day compared to the control (Manuel et al., 2013).

Pacek et al. (2014b) focused on identifying the individual or social-level events that most influence either interest in quitting or lifetime use of NRTs. They used data from the BEACON (Being Active and CONnected) study, which was a longitudinal study focused on social and environmental influences on both former and current drug users' HIV medication adherence and health outcomes (Pacek et al., 2014a). For the more

recent study, Pacek et al. (2014b) extracted data from the 267 index participants from BEACON who reported being current smokers. These participants answered supplemental questions concerning sociodemographics, their frequency of smoking, NRT use, nicotine dependence, and family attitudes towards smoking (Pacek et al., 2014b). They found that older participants, as well as those who had reported lifetime NRT/medication use had higher interest in quitting (Pacek et al., 2014b).

Provider-Focused Studies

Clearly, medication and NRT prescription can potentially foster more interest in making a smoking cessation attempt. However, there is a knowledge gap between HIV-specific care providers and non-HIV specific care providers in regards identifying patients' smoking (Crothers et al., 2007). HIV-specific medical providers are much less likely to be able to identify current smokers than non HIV-specific providers (Crothers et al., 2007). Interestingly, physicians were less likely to correctly identify current smokers than nurses or nurse practitioners (Crothers et al., 2007).

While they lack sufficient skills needed to identify smokers, HIV-specific care providers have demonstrated a willingness to improve in this area. About 75% of non-physician HIV-specific care providers surveyed indicated that they would be willing to seek more education on tobacco use and smoking cessation for PLWHA, compared to less than 33% of physician care providers (Horvath, Eastman, Prosser, Goodroad, & Worthington, 2012). This seems to reflect physicians' prioritization of smoking cessation in the context of other healthcare needs of PLWHA.

While many HIV providers do conduct steps of the Five As with clients, relatively few complete all the stages (Bell et al., 2019). This is especially important because

experience of physician-delivered smoking status assessment is significantly positively correlated with higher readiness to quit among HIV-positive smokers (Amiya et al., 2011). Amiya et al. (2011) found that 73% of the current smokers who had made a hospital visit in the last twelve months reported experiencing a physician-delivered smoking status assessment.

Other researchers have focused on smoking cessation interventions led by HIV care providers. Wewers, Neidig, and Kihm (2000) conducted a quasi-experimental longitudinal study that tested the effectiveness of an eight week nurse-managed, peer-led smoking cessation intervention for HIV-positive smokers. The design of this intervention was unique in that participants were counseled for eight weeks by a peer educator, who was an HIV-positive ex-smoker who had been trained by a nurse (Wewers et al., 2000). At weeks one, three, and eight, they met with both the peer educator and the nurse, with quit dates set for week three. The peer educators also called the participants once a week to discuss progress and cessation strategies (Wewers et al., 2000). Participants in the control group only received written smoking cessation advice by mail. Follow-up data were collected in both groups at the end of week eight and then again eight months afterward (Wewers et al., 2000). The quit rate for those in the intervention group was an astonishingly high 62.5% at both the eight week and eight month follow-ups, compared to 0% for the control group (Wewers et al., 2000). While these results are promising, the study had an extremely small sample size of only fifteen participants, limiting its statistical power and relevance.

Comorbidity

In this review, four articles incorporated substance abuse and mental illness into their research on tobacco use among HIV-positive individuals. Approximately 40% of PLWHA report abusing alcohol (Humfleet et al., 2009). Additionally, 50% of HIV-positive smokers meet the criteria for alcohol dependence, 37.5% for a major depressive episode, and 25% or bipolar disorder (Humfleet et al., 2009). Higher current and lifetime overuse of alcohol, lifetime and current illicit drug use are all positively correlated to being a current smoker (Burkhalter, Springer, Chhabra, Ostroff, & Rapkin, 2005). Chew, Steinberg, Thomas, Swaminathan, and Hodder (2014) found that patients with a history of illicit drug use were five times less likely to be abstinent from smoking after their intervention than those who had no history of drug use (Chew et al., 2014).

In a follow-up using participants from their previously described study, Humfleet et al. (2009) examined smoking-related and demographics variables characteristic of HIV-positive smokers. They used a cross sectional format, and assessed comorbid drug use, depression, and psychiatric diagnoses as their outcome variables (Humfleet et al., 2009). Perhaps the most intriguing result from this study is that only 45% of participants identified lifetime abstinence as a goal for treatment (Humfleet et al., 2009). This supports a possible connection between alcohol and drug abuse, and attitudes about smoking cessation among HIV-positive smokers.

Motivation and Self-Efficacy

Across the literature, there are a number of trends that appear throughout the findings of the different studies. A major theme is the relationship between motivation, self-efficacy and smoking status. Approximately twelve articles reported data on either

self-efficacy or motivation in relation to smoking behaviors. Of those, four reported a positive correlation between either motivation or self-efficacy and positive smoking behavior changes. One of them was a study published by Cummins, Trotter, Moussa, and Turham (2005), where, in a case series of HIV-positive smokers, those who were able to quit by the end of their intervention had higher scores of readiness to quit and had higher self-efficacy. Additionally, those who were only able to reduce their smoking had similar scores for motivation to quit and perceived difficulty, but lower self-efficacy scores.

Berg, Nehl, Wang, Ding, He, Johnson, et al. (2014) found that HIV-positive smokers were more likely to have made a recent quit attempt than HIV-negative smokers.

Interestingly, some researchers suggested that there was no relation between self-efficacy, motivation, and positive smoking behavior changes. Shuter, Morales, Considine-Dunn, An, and Stanton (2014) found that participants who used the website at higher rates and were more engaged in their use had higher quit rates. However, they found no relation between motivation and website usage .

Smoking cessation at HIV clinics

It is estimated that if 10-25% of HIV positive smokers aged 30-64 were to quit, there would be an expected 106,000-265,000 life years gained, thus highlighting the importance of addressing smoking at every opportunity (Reddy et al., 2016). However, PLWHA who smoke are less likely than HIV negative smokers to be prescribed NRTs (Shahrir et al., 2020). Shuter et al(2012) found that HIV care providers who had received formal training in smoking cessation scored higher on the knowledge and belief variables (Shuter et al., 2012). Providers who had less than 75 PLWHA patients

were more likely to be interested in receiving training than those who had more than 300 PLWHA patients (Shuter et al, 2012). This suggests that when HIV care providers become overloaded with patients, they tend to be less worried about smoking cessation treatment than other aspects of HIV care. This is perhaps a reflection of the level of priority that smoking cessation for HIV-positive smokers gets in HIV treatment centers.

Smoking Cessation Services and Public Policy

Healthy People 2020

According to the CDC, 7 out of every 10 adult smokers report wanting to quit smoking completely (Centers for Disease Control and Prevention, 2016b). One of the best places to administer smoking cessation therapy is at a doctor's office or medical care office (Centers for Disease Control and Prevention, 2016b). However, this can be hampered by an office's inability to provide smoking cessation treatment for clients. In order to increase the rate of successful smoking cessation attempts, it is important to first focus on access to EBTs for tobacco use, especially for populations where there is a critical need. To that end, with *Healthy People 2020,* health promotion experts aimed to increase tobacco cessation counseling in both substance use and mental health treatment centers . Currently, only 34.2% of substance use treatment centers and 24% of mental health clinics offer such services for their clients (US Department of Health and Human ServicesBerg, Nehl, Wang, Ding, He, & Wong, 2014; US Department of Health and Human Services, 2011). This illustrates the importance of providing smoking cessation treatment for populations with comorbidities in care settings.

Medicaid Expansion

Healthy People 2020 addressed another issue concerning access to smoking cessation services, which is the expansion of Medicaid to include coverage for EBTs for tobacco use in the US. One of the goals of *Healthy People 2020* was to increase comprehensive Medicaid coverage of EBTs for tobacco use in the US . Requiring copay and insurance for EBTs for smoking cessation can act as a barrier for many smokers, so expanding Medicaid to include such measures may be a potential method to facilitate smoking cessation among Medicaid-eligible tobacco users (DiGiulio et al., 2016). Increased insurance coverage of tobacco cessation is strongly associated both with increased quit attempts and higher success rates (Fiore, 2008).

The Affordable Care Act

In 2010, President Obama signed the Affordable Care Act (ACA) into law. The act helped build upon the plans put into place by the National HIV/AIDS Strategy. Prior to the ACA, it was prohibitively difficult for people with preexisting conditions like HIV/AIDS to obtain health insurance. By increasing health care access for PLWHA, ACA filled an area of great need in HIV care (Cahill, Mayer, & Boswell, 2015). As a result of this act, insurance companies can no longer deny people the right to purchase insurance if they have been previously diagnosed with HIV (Centers for Disease Control and Prevention, 2015a). One of the most important aspects of the law as it concerns PLWHA is that it extended Medicaid eligibility to people living within 133% of the federal poverty line (FPL) (Centers for Disease Control and Prevention, 2015a)

Additionally, it closed what is referred to as the “donut hole.” Medicare part D prescription drug coverage starts helping to pay for drugs once the person has reached

their deductible of $310, but then stops helping to pay once the total amount of money spent on the person's medication reaches $2800, at which point they are fully responsible for paying for their medication until it reaches $4500 (Blum, 2010). Because of ACA, patients who are in this gap, called the donut hole, now only have to pay for 50% of their medication (Centers for Disease Control and Prevention, 2015a).

Ryan White Care Act

With the advancements it brought in health care and treatment for PLWHA, ACA called into question the necessity for the Ryan White Act in the future. Where previously Ryan White-funded services had been the main option for PLWHA who were unable to get insured because of their condition, ACA provided them with many new opportunities to access services they had not been able to before. However, while ACA has undoubtedly improved the healthcare access of PLWHA in the US, the Ryan White Act is still a crucial part of the HIV service and health care infrastructure of the US.

Originally, the ACA was supposed to include a provision mandating that the Medicaid and Medicare expansion be required in all fifty states and the District of Columbia (Cahill et al., 2015). However, that part was ruled unconstitutional by the supreme court in 2013 (Cahill et al., 2015). As a consequence of this, states were allowed to decide on their own whether or not they would accept the expansion of these services. Appallingly, by 2014, 16 states rejected the expansion (Cahill et al., 2015). As of January 2016, that number has increased to 17, with many of the states in the southeast choosing not to expand coverage (Advisory Board, 2016). It is estimated that nearly 60,000 PLWHA reside in states that have rejected Medicaid expansion (Snider et al., 2014).

In some of these states, it is incredibly hard to qualify for Medicaid as it stands. For example, in Alabama, a family of three must make no more than 16% of the FPL in order to qualify (Cahill et al., 2015). Therefore, a large portion of people living in these states, including many PLWHA, remain uninsured, but are not quite impoverished enough to meet the requirement for Medicaid or the private insurance premium subsidy (less than 400% of the FPL) (Cahill et al., 2015). The Ryan White Care Act thus is still highly relevant because it provides critical health care services to people in these states who are in need but are unable to reap the benefits of ACA.

While many PLWHA have new access to Medicaid, Medicare, and private health insurance as a result of ACA, that access does not always necessarily equate to receipt of care nor affordability of medications (Kates, 2013). As much as 21% of PLWHA who are on Medicaid are not linked to treatment in a timely manner (Crowley & Kates, 2013). One significant aspect of the Ryan White Act is that it is a “payer of last resort,” essentially meaning that it pays for care not covered by other resources in an attempt to meet the needs of PLWHA (Kates, 2013). Along with these services, Ryan White funding also supports services that are not necessarily traditionally provided through Medicare, Medicaid, or insurance (Kates, 2013). These include program services such as counseling, testing, outreach services, medical transportation, treatment adherence, both nonmedical and medical case management, and cost sharing services, among others (Kates, 2013). As previously discussed, HIV treatment centers and AIDS service organizations already have a difficult time getting patients into care and keeping them there. The Ryan White Care Act provides services that are integral in strengthening the performance of the continuum of care.

Ryan White and ACA are able to coexist in a productive manner, and Massachusetts provides a good example of that. In 2006, it had already become the first state in the nation to mandate insurance for every one of its citizens (Cahill et al., 2015). They also expanded Medicaid to up to 300% of the FPL (Cahill et al., 2015). As a result, the percent of the state population that was uninsured dropped to just 2% (Cahill et al., 2015). ADAP funds began being used to help low and middle income PLWHA access prescriptions (Cahill et al., 2015). The results of the Ryan White Act coordinating with Medicaid expansion and an insurance mandate began to show. At one point, a survey showed that about 91% of PLWHA in Massachusetts who used the ADAP program to access medication were taking their ARTs, and an astounding 72% were virally suppressed (Cahill et al., 2015). As a result, the HIV rate in Massachusetts dropped over 45% (Cahill et al., 2015). This case should be used as a blueprint for how to use the Ryan White Act in conjunction with ACA to strengthen services provided to PLWHA in states that accept Medicaid expansion.

Conceptual Framework

Background on Consolidated Framework for Implementation Research

The theoretical background for this study is based on the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009). The CFIR was created with the goal of advancing implementation research by synthesizing its many theories into one cohesive system of standardized definitions and constructs to better aid in the development and evaluation of interventions and their implementation (Damschroder et al., 2009). Because it is comprised of elements of nineteen different theories, the CFIR is an extremely broad framework. Those who use it recognize that

implementation is a complex process containing many different levels, in which several different factors can potentially affect the intervention. The overarching idea is that it can be used to identify those factors at every level, making it ideal for this research.

Domains of the CFIR

There are five separate domains that make up the core of the CFIR. The first is known as “characteristics of the intervention.” Interventions are generally considered to made up of two different types of elements: ‘core components’, which are essential to the integrity of the intervention and cannot be changed or discarded, and ‘adaptable periphery’, which are aspects of the intervention or intervention site that can be changed to increase the intervention’s effectiveness (Damschroder et al., 2009). Adaptability is a necessary trait of an intervention, because while it is important to remain as uniform as possible when implementing an intervention across multiple sites, not all of them will be identical. Different sites will have different organizational structures, resources, and needs which will require interventions to be adapted to fit the specific sites (Damschroder et al., 2009). Thus, one of the most important steps in using the CFIR to plan an implementation is determining which parts of the intervention can be changed if needed, and which parts are integral to its success and cannot be modified (Damschroder et al., 2009).

The outer setting domain of the CFIR consists of the political, social, and economic climate surrounding the intervention site (Damschroder et al., 2009). Forces from this setting can influence the inner setting of the implementation. Thus, the difference between the outer setting and the third domain, the inner setting is more a gray area than a defined border (Damschroder et al., 2009).

Where the outer setting refers to political and cultural influences outside the site, the inner setting encompasses political and social structures of the sites in which the intervention takes place (Damschroder et al., 2009). In a previous study on comorbidities among PLWHA, Edelman et al. (2016) found that inner settings factors such as communication among providers, implementation climate, readiness for implementation, and relative priority of addressing alcohol use were important determinants of implementation of integrated stepped care for alcohol abuse at HIV clinics. Providers felt that the design of the intervention matched the goals of the organization, and thus were likely to implement it.

By now it is clear that the domains of the CFIR have complex intermingling relationships with each other. This is appropriate because it captures how complicated the interplay of different variables and settings that can influence intervention implementation can be. The fourth domain of the CFIR, characteristics of the individuals, is no different in that constructs from this domain can have sizeable effects on other areas of the intervention implementation. The individuals referred to are the people that are involved with the intervention or implementation. As individuals, they have their own ideas and decision-making abilities. They also possess the power to potentially influence others, which can have an effect on the outcome of an intervention (Damschroder et al., 2009). Edelman et al. (2016) found that there was high self-efficacy among the providers and that they were open to using innovative approaches to address the issue.

The fifth and final domain of the CFIR is the actual process of the implementation. This is again a manifestation of the commingled relationships of the

CFIR domains and constructs in that, in order for an intervention to be successfully installed within an organization, an active process of change must occur (Damschroder et al., 2009). The impetus for this change may originate from many different sources. It can be instigated by forces from the inner or outer settings, such as local members of the community who carry great power or respect, or it can stem from individuals within the organization who are motivated to change (Damschroder et al., 2009). Generally, the implementation process is actually a series of smaller subprocesses carried out within the organization (Damschroder et al., 2009).

There are four essential keys to successful organizational change: Planning, engaging, executing, and reflecting and evaluating (Damschroder et al., 2009). In order to ensure the effectiveness of an implementation, investigators must design a plan that focuses on strengthening the ability of the stakeholders and the communities in which the organizations work to make use of the intervention (Damschroder et al., 2009). The plan should be driven by a theory being used to implement the intervention (Damschroder et al., 2009). In order to properly execute an intervention, researchers must identify and engage with opinion leaders, implementation leaders, and champions of the intervention from within the organization, as well as external change agents (Damschroder et al., 2009). Finally, quality intervention implementation necessarily involves a reciprocal flow of feedback at every stage of the implementation process (Damschroder et al., 2009). Constant communication with the stakeholders throughout the process will help to strengthen the intervention and ensure that it is a good fit with the implementation site (Damschroder et al., 2009).

The CFIR is an extremely expansive framework, and thus it is neither necessary nor feasible to use it in its entirety when conducting research. For the purposes of this study, it was deemed most important to examine the inner settings and outer settings domains of the framework. While this framework was not strictly adhered to for this study, constructs from its inner and outer settings were used as a guide for developing the survey.

Chapter 3 Methodology

Study Design

This study was a cross-sectional design that involved collecting data from HIV clinic program administrators. We administered a one-time online survey hosted on a website whose link was disseminated via email. The outer setting and inner setting domains of the CFIR were used as a guide in selecting and developing the survey measures.

Subjects

This study is unique in that it examined tobacco cessation for PLWHA, not from the perspective of PLWHA or the clinicians treating them, but from the perspective of HIV clinic directors and administrators. The survey focused on internal and external facilitators of and barriers to implementation of smoking cessation services. The participant pool in this study was comprised of 109 employees from HIV clinics across the US. We aimed to recruit directors or managers, but included any employee who was knowledgeable about the organizational infrastructure.

Recruitment

In order to recruit participants for this study, we accessed the National Prevention Information Network's (NPIN) database of HIV clinics in the US (Centers for

Disease Control and Prevention, 2017). Programs were disqualified if NPIN did not list them as having at least one HIV-specific service. Eligible programs were entered into a spreadsheet database sorted by state. From there, one program was randomly selected from each state and contacted via telephone. This was done in order to ensure a more varied representation of regions. Once contacted, program administrators were informed about the study and its methods, and asked if they wanted to take part. If they refused or stated that they did not offer HIV-specific surfaces, they were no longer approached for the study. If they expressed interest in participating, they were asked for their email contact and sent an email containing further information about the study and a link to the survey. This process was repeated until 100 participants took the survey.

Procedures

Once they agreed to take part in the study, potential participants were sent an email with information about the study and a link to the survey. If they completed the survey, they were marked as completed in the database and were not sent any further emails. If, after at least two weeks, they had not completed the survey, potential participants were sent a follow-up email containing the same information and link. No further emails were sent. Each survey contained a consent form, which stated that by continuing with the survey they were consenting. After the consent form, participants answered two qualifying questions: “Do you offer any of the following medical services specifically for people living with HIV/AIDS?” and “Do you offer any of the following support services specifically for people living with HIV/AIDS?” The list of medical and support services were from the Ryan White Care Act’s definition of HIV medical and support services (Health Resources and Service Administration HIV/AIDS Bureau,

2018). If they answered yes to one or both of these, they were prompted to continue with the survey. If participants answered no to both of these, they were disqualified from the survey and immediately directed to a separate questionnaire that let them know the survey was complete and that they could choose to enter their email to be included in a drawing for one of twenty $50 Amazon gift cards for their participation. Those who qualified and participated in this survey (either partially or fully) were also directed to this same separate item once done. Email addresses were kept separate from survey answers.

Many precautions were taken to protect confidentiality. The survey contained no identifiable personal information. Both the recruiting emails and the consent form informed participants that all of their answers were confidential, and that they were under no obligation to take part in the study. Additionally, participants were told that they could stop taking the survey at any time without penalty or loss of potential benefits. The Institutional Review Board at the University of Georgia approved this study.

This study is innovative in that there is still relatively little information about smoking cessation services in HIV clinics. We aim to be the first study to collect nationwide data on provision of tobacco cessation services at HIV clinics and the various factors that affect implementation of such services.

Measures

Clinicians who treat PLWHA have a unique opportunity to address smoking as an issue among their patients. However, despite the fact that the USPHS' recommendation (Fiore, 2008) for doctors, dentists, physicians, nurses, and clinicians is to ask their patients about smoking at every visit, HIV clinicians are severely lacking in this regard.

In a recent study, researchers reported that, in a number of HIV clinics in San Francisco, patients only received each of the Five A's between 22.4 and 49.9% of the time (Vijayaraghavan et al., 2017). There clearly exist barriers that prevent HIV providers from implementing smoking cessation treatment, and identifying them is a crucial step toward improving the provision of such services nationwide.

Previous studies have shown that clinicians feel they have insufficient training and organizational support to enact tobacco cessation with their clients (Knudsen, 2017). Thus, our study will draw upon the inner setting and outer setting domains of the CFIR to analyze barriers and facilitators to smoking cessation for PLWHA at HIV clinics.

Proposed CFIR constructs for this study

In this study, constructs of the CFIR's inner and outer settings domain were selected, and survey instruments were either chosen or developed to match the idea of those constructs. Because it is an extremely broad framework, attempting to use each of its domains is not feasible. Instead, it is recommended to choose a few applicable constructs from the most relevant domains for a study. For the purposes of this study we used the inner and outer setting domains to analyze the issue. From the inner settings domain, we investigated: (1) the structural characteristics; (2) culture; and (3) implementation climate constructs. The selected outer settings constructs were: (1) patient needs and resources; cosmopolitanism and external policies and incentives. Table two highlights the selected constructs from each domain.

Measurements

Availability of Smoking Cessation and Reimbursement for smoking cessation services (CFIR)

Based on the work of , the “Perceived Availability of evidenced based treatment for smoking cessation” instrument contains 34 items measuring availability of the five frontline medications as well as varenicline and nortriptyline. In addition to asking about medications, the survey also covers behavioral therapies for smoking cessation, such as the 5 A’s, MI-based counseling, and quit-line support (Abrams et al., 2003). Each item contains three possible answer choices for the availability portion: Yes, No, and Do Not Know .

Outer Setting Measures

Revenue Sources (CFIR Construct: External Policies and Incentives)

The *outer setting* of the CFIR encompasses community and policy-level factors that may influence the implementation of an intervention. With that in mind, it is critical to examine the role that Medicaid and other revenue sources play in funding the clinics. Our survey included an instrument adapted from Abraham et al. (2018)that measures Medicaid and insurance funding at the clinics. Three questions cover clinic ownership and organization structure. These items include: (1) Is your center private for-profit, private not for profit, or public?; and (2) Is your center owned by another organization? (By “owned we mean that another organization has legal responsibility for, and authority to control this unit and its property). Then participants were asked to estimate percent of total revenues from various funding sources from the previous fiscal year. Answer

choices included: (1) Client/self-pay, (2) revenues from Medicaid fee-for-service, (3) revenues from Medicaid managed care, (4) revenues from Medicare fee-for-service, (5) revenues from Medicare managed care, (6) revenues from private or commercial fee-for-service insurance, (7) revenues from private or commercial managed care insurance, and (8) revenues from other sources.

Ryan White Funding (CFIR Construct: External Policies and Incentives)

In order to assess the relationship that Ryan White funding has with tobacco cessation services at the clinics, participants were asked "Does your program receive any funding from the Ryan White Care Act?" If they answered "Yes," they were asked to identify the types of Ryan White funding they receive.

Types of Services Provided (CFIR: Patient needs and resources)

In analyzing HIV clinics, it is important to note the differences in the types of services they provide. The majority of HIV clinics in the US provide either medical services, support and care services, or some combination of the two. The Joint United Nations Programme on HIV/AIDS [UNAIDS] (2016) defines HIV supportive services as "key non-antiretroviral therapy clinical services, prevention and treatment of HIV-related infections, and non-clinical services that in combination with antiretroviral therapy contribute towards the reduction of rates of ill health and HIV-related deaths among, and increase the well-being of people living with HIV." These types of services can include non-medical case management, food provision, housing services, and medical

services, among others (Health Resources and Service Administration HIV/AIDS Bureau, 2018)

To determine whether clinics are medical service providers or supportive service providers, participants were asked to identify services their clinic provides. The list of services was based on definitions from the Ryan White Care Act. For medical services, participants chose from a list of twelve options, including “AIDS Drug Assistance Program treatments,” “Early Intervention Services,” and “Medical case management, including treatment adherence services.” Participants also identified any support services they offer by choosing from a list of fifteen different options, including “Housing,” “Nonmedical case management services,” and “Psychosocial support services” (Health Resources and Service Administration HIV/AIDS Bureau, 2018). Participants were able to select all that applied. Both of these items also had an “Other option,” with a text box for further explanation. If a participant selected *any* medical service, their clinic was considered a medical service provider, whereas if they did not select any medical services, their clinic was considered an AIDS Service Organization (ASO).

Reimbursement (CFIR Construct: External Policies and Incentives)

Researchers have demonstrated that reimbursement for smoking cessation services is an important predictor of successful smoking cessation treatment outcomes (Kaper, Wagena, Willemsen, & van Schayck, 2006). In order to examine availability of reimbursement for smoking cessation services within the context of HIV clinics, we included a reimbursement scale coinciding with the *Availability of Smoking Cessation Services* scale.For each item, in addition to identifying the availability or existence of the

service at the clinic, participants were also asked to report whether or not that service is reimbursable. The answer choices for each item were: Yes; No; and Do Not Know (Abrams et al., 2003).

Networking with Outside Organizations (Cosmopolitanism)

A crucial component of the CFIR is an organization's ability to network with outside entities. This increases their social capital, and is potentially an indicator of successful implementation of interventions within the organization. We created a measure specifically for this study. There are 11 items. Of those, two have a list of answer choices from which participants may select any that apply ("Are you a member of any of the following national HIV associations?" and "Are any of your employees members of any of the following national HIV associations?"). The rest had dichotomous "Yes" or "No" answer choices. These items covered whether or not the participants and their employees attend any conferences related to the associations, whether employees are mandated to attend continuing education or training, and whether they are encouraged to attend continuing education or training. For the latter two, the questions are stratified by type of employee (doctors, nurses, and care providers; case managers; and support staff).

Inner Setting

Managerial Openness to EBTs (CFIR Construct: Implementation Climate)

The Perceptions of Managerial Openness to EBTs scale measures perceptions that managers would be open to clinicians using novel EBTs to treat their patients

(Aarons, 2004). For the purposes of this study, the measure was adapted to directly address managers rather than clinicians' perceptions of managers. Each item is answered on a five point Likert scale ((1) Strongly Disagree" to (5) Strongly Agree)). Example items include "I encourage counselors to try new types of therapy/interventions even if they have to follow a manual," and "I encourage counselors to use new and different types of therapy/interventions developed by researchers."

Attitudes toward smoking cessation (Implementation climate)

While examining clinic directors' general openness to the use of innovative treatments helps illustrate organizational attitudes, this study required deeper exploration of attitudes toward EBTs for smoking cessation. The Attitudes Toward Smoking Cessation Treatment scale contains four items targeting clinic directors beliefs about smoking cessation treatment for their clients, each with a five point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly Agree) (Walsh, Bowman, Tzelepis, & Lecathelinais, 2005). Example items included "For patients who smoke, smoking cessation should be tailored to their readiness to quit," and "The provision of a comprehensive range of smoking cessation programs should be an integral function of this HIV clinic."

Coworker Attitudes Toward Smoking Cessation (Implementation climate)

This scale provides further insight into the *inner setting* domain of the HIV clinics. It is identical to the *Attitudes Toward smoking Cessation* scale, except each item asks about *co-workers* attitudes toward smoking cessation rather than personal attitudes (Walsh et al., 2005). As with the previous measure, participants answered each item on a five point Likert scale where 1 was *Strongly Disagree* and 5 was *Strongly Agree*.

Example items included “My coworkers are in agreement that for patients who smoke, smoking cessation interventions should be tailored to their readiness to quit” and “My coworkers are in agreement that the provision of a comprehensive range of smoking cessation treatment programs should be an integral function of this HIV clinic.”

Structural Attributes (CFIR Construct: Structural Attributes)

In order to assess factors that may affect provision of EBTs for smoking cessation at HIV clinics, it is crucial to take into account structural factors of the organization itself. Among HIV care providers, time constraints are a significant barrier to implementation of smoking cessation treatment (Horvath et al., 2012). Such time constraints may be a result of high caseloads. Thus, as part of this study participants were asked to describe the size of the patient population at the clinic, the number of employees, and the average caseload of each employee.

Data analysis

Due to the exploratory nature of the study, our analysis was relatively simple. All analysis was completed using IBM SPSS Statistics version 26.

Research Question 1: To what extent are HIV clinics across the country offering any evidence-based smoking cessation services to their clients?

In order to determine the rate at which HIV clinics across the country are providing smoking cessation for their clients, we conducted a simple frequency analysis. Each individual type of smoking cessation service was analyzed. Then, we explored the frequencies of the sum variables, as well as the binary variables measuring availability of *any* medication or *any* behavioral treatment.

Research Question 2: What are the external and clinic-level factors that impact successful offering of smoking cessation services?

To answer Research Question Two, we conducted regression analyses for each scale. For each scale and standalone item, separate regression analyses were run with each individual type of therapy, as well as availability of *any* smoking cessation therapy, and any medical or behavioral treatment, as well as total number medical and behavioral treatments offered as outcome variables. Data was first stratified by clinic type: medical, or service-based. However, this stratification revealed that there were only twelve programs that were considered ASOs based on the definition used.

Because of this, no inferences could be made about the differences between medical providers and AIDS Service Organizations (ASOs). In order to be classified as being a program that offers smoking cessation, they had to offer at least one form of smoking cessation for their clients, including any of the first line medications or any type of behavioral counseling.

In a review of the literature, Knudsen (2017) found that both perception of managerial support for smoking cessation and reimbursement for smoking cessation services were positively correlated with implementation of smoking cessation programs in substance use treatment centers. Based on this, we hypothesize that these factors will also predict implementation of smoking cessation services at HIV clinics.

Additionally, Knudsen (2017) determined that funding from outside resources such as Medicaid were predictors of implementation of smoking cessation at substance use treatment centers. Therefore, we hypothesize that both Medicaid and Ryan White funding will be positively correlated with provision of smoking cessation services at HIV clinic.

Chapter 4 Results

Sample description

There were 109 participants in the survey. Ten did not answer any demographic questions. The average age of participants was 44.57 (SD=11.844). Approximately 20.25% of the sample were male, 67% were female, 1.8% were nonbinary, and 1.8% preferred not to disclose their gender. The sample population was about 69.7% White or Caucasian, 8.3% Black or African American, 3.7% multiracial, 1.8% Asian, 1.8% Native Hawaiian or Pacific Islander. About 11% identified as Hispanic or Latinx.

Research Question 1: At what rate are HIV-specific programs in the US offering smoking cessation treatment for clients?

Medical treatments for smoking cessation

About 48.6% of respondents indicated their programs offered some form of medical smoking cessation treatment for their clients. On average, programs offered 2.18 forms of medical treatment for smoking cessation (SD=2.635). Buproprion was the most frequently offered medical treatment (42%), followed by the nicotine patch (41.3%), Varenicline (39.4%), nicotine gum (34.9%), nicotine lozenge (24.8%), and Nortrtiptyline (18.3%). Less than 10% of programs offered each of the remaining types of medical treatment.

Table 1 Available smoking cessation medications

Medication	*Available (%)*	*Unavailable (%)*
Nicotine Patch	45 (41.3)	64 (58.7)
Nicotine Gum	38 (34.9)	71 (65.1)
Nicotine Lozenge	27 (24.8)	82 (75.2)
Nicotine Nasal Spray	9 (8.3)	100 (91.7)
Nicotine Inhaler	10 (9.2)	99 (90.8)
Bupropion SR	46 (42.2)	63 (57.8)
Varenicline	43 (39.4)	66 (60.6)
Nortriptyline	20 (18.3)	89 (81.7)
Any Medication	53 (48.6)	56 (51.4)

Behavioral treatments

Over 86% of respondents reported that their programs provided behavioral methods for smoking cessation. The mean number of behavioral treatments offered was 3.3119 (SD=3.37666). While only 21.1% of participants reported implementing the Five A's, 67% said that clients are asked whether they smoke at each visit, 58.7% said that at each visit clients who smoke are advised to quit. About 59.6% said that staff assess client willingness to quit at each visit, while 45% reported that their program assists clients in quitting. Finally, 27.5% stated that at each visit, program staff schedule a smoking cessation follow-up appointment.

As with medications, it is important to measure the extent of behavioral treatments offered at each program. To this end, a sum variable was created to measure the total number of behavioral therapies offered, titled BehSum. Some of the treatments listed as behavioral therapies were not considered intensive enough (e.g. providing self-help pamphlets). Additionally, past research in general practitioners has shown that many do not go past the first two steps of the Five A's (Vijayaraghavan et

al., 2017). For this reason, an additional sum variable was created to measure the total number of more intensive behavioral treatments available. Therapies were considered intensive if they involved employees personally interacting with clients specifically concerning smoking cessation, progressing further than simply asking about smoking status and advising to quit. This variable excluded asking client about smoking status, advising client to quit, having additional community resource referrals, providing self-help materials, and providing telephone counseling**.** While programs offered an average of 3.3 forms of behavioral treatment, the mean number of intensive behavioral treatments provided was 2.7 (SD=3.05).

Only 21.1% of participants reported implementing the Five A's. Overall, there was a general downward trend in the progression through each of the individual steps. Approximately 67% of respondents said that clients are asked whether they smoke at each visit, while only 58.7% said that at each visit clients who smoke are advised to quit. About 59.6% said that staff assess client willingness to quit at each visit. From there, there was further drop off as 45% reported that their program assists clients in quitting and only 27.5% stated that at each visit, staff schedule a smoking cessation follow-up appointment.

Table 2 Availability of Behavioral Treatments

	Available Total (%)	*Unavailable* Total (%)
Implement the Five A's	23 (21.1)	86 (78.9)
"Ask"	73 (67)	36 (33)
"Advise"	64 (58.7)	45 (41.3)
"Assess"	65 (59.6)	44 (40.4)
"Assist"	49 (45)	60 (55)
"Arrange for follow-up"	30 (27.5)	79 (72.5)
Self-help materials	69 (63.3)	40 (36.7)
Individual counseling focused on problem-solving/skills training	36 (33)	73 (67)
Have four or more individual counseling sessions available	19 (17.4)	90 (82.6)
Offer group counseling	13 (11.9)	96 (88.1)
Offer telephone counseling	31 (28.4)	78 (71.6)
Offer additional community resource referrals	70 (64.2)	39 (35.8)
Use Motivational Interviewing	45 (41.3)	64 (58.7)
Provide Combined counseling and medication treatment	35 (32.1)	74 (67.9)
Use contingent reinforcement	7 (6.4)	102 (93.6)
Any intensive behavioral treatments	67 (61.5)	32 (38.5)

Any form of smoking cessation

In order to be categorized as offering medical treatments for smoking cessation, participants needed to state that their program offered at least one of the first or second-line medications for smoking cessation. Similarly, to be considered providing behavioral treatments for smoking cessation, participants needed to answer "Yes" to at least one of the items about behavioral services provided. Using this standard, we created three

dichotomous variables: “Smoking Cessation Any,” “Smoking Cessation Medical,” and “Smoking Cessation Behavioral.” From there, three sum variables were created: “Smoking Cessation Both,” which added the latter two together to measure how many programs offered both types of smoking cessation, as well as MedSum, which totaled the number of medical treatments available, and BehSum, which measured the number of behavioral treatments available. Approximately 10.1% of participants reported that their program did not offer *any* type of smoking cessation treatment for their clients. Around 45% of participants reported that their programs either offered only medical or only behavioral treatments for smoking cessation. Finally, 45% offered both medical and behavioral treatments for smoking cessation.

Table 3 Total number of treatments available

Treatment Type	*M*	*SD*
Total available medical treatments	2.18	2.636
Total Available Intensive Behavioral Treatments	2.715	2.05

Reimbursability

If respondents indicated that a treatment was available, they were then asked whether or not said treatment was reimbursable. Five medications were reimbursable at less than 50% of the programs where they were available. Two (Bupropion SR and Varenicline) were reimbursable at exactly 50% of programs that offered them while only one (Nortriptyline) was reimbursable at more than 50% of programs where it was offered.

Table 4. Reimbursability of Medications

Medication	*Reimbursable (%)*	*Not Reimbursable (%)*
Nicotine patch	19 (42.2)	26 (57.8)
Nicotine Gum	15 (39.5)	23 (60.5)
Nicotine Lozenge	10 (37)	17 (63)
Nicotine Nasal Spray	3 (30)	7 (70)
Nicotine Inhaler	4 (36.4)	7 (63.6)
Bupropion SR	23 (50)	23 (50)
Varenicline	22 (50)	22 (50)
Nortryptiline	13 (61.9)	8 (38.1)

Research Question 2: What factors predict the availability of evidence based treatments for smoking cessation at HIV specific programs?

Outer Setting

Ryan White and Smoking Cessation Medication

About 83 respondents (81.4%) stated that their program was funded, at least in part by the Ryan White Care Act. Approximately 28 (25.7%) received funding from Ryan White Care Act Part A, 72 (66.1%) received funding from part B, 32 (29.4%) received funding from Part C, 14 (12.8%) received funding from Part D, and 4 (3.7%) received funding from Part F.

Table 5 Ryan White Funding

Ryan White Funding	*Yes (%)*	*No (%)*	*Do Not Know*	*System Missing (%)*
Any	83 (76.1)	15 (13.8)	4 (3.7)	7 (6.4)
Part A	28 (25.7)	81 (74.3)	N/A	N/A
Part B	72 (66.1)	37 (33.9)	N/A	N/A
Part C	32 (29.4)	77 (70.6)	N/A	N/A
Part D	14 (12.8)	95 (87.2)	N/A	N/A
Part F	4 (3.7)	105 (96.3)	N/A	N/A

Funding from Ryan White Parts A, B, and F did not significantly predict provision of medication for smoking cessation or each of the individual types of medication. However, programs that were funded by Part C (X^2=19.30, df=1, *N*=109, *p*=) and Part D (X^2=5.76, df=1, *N*=109, *p*=.016) were significantly more likely to offer medication for smoking cessation than programs that were not. Those that received funding from Ryan White Part C were 3.47 times more likely to provide the nicotine patch (X^2=8.41, df=1, *p*=.004), 2.5 times more likely to offer nicotine gum (X^2=4.57, df=1, *p*=.033), 6 times more likely to offer Bupropion (X^2=16.35, df=1, *p*=<.001), and 4.77 times more likely to offer Varenicline (X^2=12.99, df=1, *p*= <001) than those that were not. Additionally, programs funded by Ryan White Care Act Part D were 4.09 times more likely to offer Bupropion (X^2=5.63, df=1, *p*=.018) and 4.70 times more likely to offer Varenicline (X^2=6.87, df=1, *p*=.009) than those that did not. The following is an example contingency table:

Table 6 Example Contingency Table

		Nicotine Patch		
		Yes	*No*	*Total*
Ryan White Part A funding	*Count*	11	17	28
	% within Ryan White Part A	39.3	60.7	100
No Ryan White Part A funding	*Count*	34	47	81
	% within Ryan White Part A	42	58	100
Total	*Count*	45	64	109
	% Within Ryan White Part A	4.3	58.7	100

Funding from Ryan White Part C predicted availability of the nicotine patch (B=1.082, SE= .439, *p*=.005), nicotine gum (B=.916, SE=.434, *p*=.035), Bupropion SR (B=1.792, SE= .465, *p*=0), and varenicline (B=1.563, SE=.45, *p*=.001). Additionally, reception of such funding predicted availability of *any* type of medication for smoking cessation (B=2.083, SE= .512, *p*=0). Funding from Ryan White Part D was also predictive of this (B=1.582, SE=.683, *p*=.025). In addition to being significantly correlated with the dissemination of *any* medication for smoking cessation, having funding from Ryan White Part D also forecast the availability of Bupropion SR (B=1.41, SE= .628, *p*=.025), and varenicline (B=1.547, SE=.63, *p*=.014). Funding from parts A, B, and F were not significantly related to the availability of any medications. Programs receiving funding from parts C and F offered more medical treatments for smoking cessation than those that did not receive such funding (B=.188, SE=.018, p=.018 and B=.426, SE=.208, p=.041).

In regards to behavioral treatments for smoking cessation, funding from Ryan White Part C and Part D were both predictive of advising clients to quit, assessing willingness to quit, assisting clients in quitting, and providing combined medical and behavioral treatment specifically for smoking cessation. Additionally, Ryan White Part C funding predicted asking if the client currently smokes, provision of self-help materials, availability of individual counseling specifically focused on social support for smoking cessation, individual counseling that focuses on problem solving or skills training specifically for smoking cessation, and the use of motivational interviewing techniques specifically for smoking cessation.

This trend is again reflected in the number of behavioral treatments offered. Programs that received funding from Part C or Part D offered significantly more behavioral therapies overall (t=3.251, *p*=.002; t=2.485, *p*=.015) as well as intensive behavioral therapies (t=3.928, *p*<.001; t=2.794, *p*=.006).

Table 7 Ryan White Part C funding as a predictor of medical treatments for smoking cessation

Medication	*B*	*SE*	*p*
Nicotine Patch	1.243	.439	.005**
Nicotine Gum	.916	.434	.035*
Nicotine Lozenge	.473	.47	.315
Nicotine Nasal Spray	-.405	.831	.626
Nicotine Inhaler	-.553	.82	.5
Bupropion SR	1.792	.465	<.001***
Varenicline	1.563	.45	.001***
Nortriptyline	.038	.541	.944
Any Medication	2.083	.512	<.001***
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 8 Ryan White Part D funding as a predictor of medical treatments for smoking cessation

Medication	*B*	*SE*	*p*
Nicotine Patch	1.082	.597	.07
Nicotine Gum	.725	.578	.209
Nicotine Lozenge	.612	.608	.315
Nicotine Nasal Spray	.74	.859	.389
Nicotine Inhaler	1.232	.761	.105
Bupropion SR	1.41	.628	.025*
Varenicline	1.547	.63	.014*
Nortriptyline	.224	.704	.75
Any Medication	1.532	5.026	.025*
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 9 Ryan White Part C funding as a predictor of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	-.205	.53	.698
"Ask"	.698	2.473	.766
"Advise"	2.943	.766	<.001***
"Assess"	2.399	.648	<.001***
"Assist"	1.612	.461	<.001***
"Arrange for follow-up"	.676	.454	.136
Self-help materials	1.231	.508	.015*
Individual counseling focused on social support	.853	.432	.048*
Individual counseling focused on problem-solving/skills training	1.017	.439	.017*
Have four or more individual counseling sessions available	.417	.531	.432
Offer group counseling	.076	.642	.905
Offer telephone counseling	.818	.45	.072
Offer additional community resource referrals	.489	.457	.285
Use Motivational Interviewing	1.642	.455	<.001***
Provide Combined counseling and medication treatment	1.93	.465	<.001***
Use contingent reinforcement	-.963	.891	.218
Any intensive behavioral treatments	1.92	.581	.001***
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 10 Ryan White Part D funding as a predictor of availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	.022	.698	.974
"Ask"	2.026	1.059	.056
"Advise"	2.417	1.058	.022*
"Assess"	1.559	.791	.049*
"Assist"	1.278	.627	.042*
"Arrange for follow-up"	1.141	.586	.051
Self-help materials	1.386	.792	.08
Individual counseling focused on social support	.677	.577	.24
Individual counseling focused on problem-solving/skills training	.822	.570	.156
Have four or more individual counseling sessions available	1.168	.628	.063
Offer group counseling	.841	.732	.251
Offer telephone counseling	.388	.603	.52
Offer additional community resource referrals	1.342	.792	.09
Use Motivational Interviewing	1.082	.597	.07
Provide Combined counseling and medication treatment	1.946	.636	.002**
Use contingent reinforcement	1.099	.891	.218
Any intensive behavioral treatments	2.29	1.058	.03*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Revenue Sources

The amount of funding that programs received from Medicaid managed care significantly predicted availability of each individual medical treatment for smoking cessation, except nicotine nasal spray. Additionally, it significantly predicted availability of any medications. Neither the percent of funding received from client self-pay or private or commercial managed care insurance significantly predicted availability of any medications. In regards to the scope of medical treatments available, revenues received

from Medicaid fee for service insurance (t=2.631, *p*=.01), Medicaid managed care(t=3.781, *p*<.001), and commercial fee for service insurance (t=2.108, *p*=.038) were positively correlated with the number of medical treatments programs offered. On the other hand, there was an inverse relationship between percent of funding received from "other" sources and the number of medical treatments available (t=-3.426, *p*=.001).

Other than Medicaid, funding resources were not indicative of most behavioral treatments for smoking cessation. Percentage of funding received from "other" sources (e.g. not Medicaid, client self-pay, or private or commercial insurance) was inversely related to asking if clients currently smoke (B=-.016, SE=.005, *p*=.003), advising clients to quit (B=-.02, SE=.005, *p*=0), assessing client willingness to quit (B=-.014, SE=.005, *p*=.005), and providing combined counseling and medication treatment for smoking cessation.

Conversely, percentage of revenues received from Medicaid managed care were indicative of availability of many behavioral treatments. These included arranging for follow-up meetings, having four or more individual counseling sessions available specifically for smoking cessation, and providing combined counseling and medical treatment for smoking cessation. Revenues received from Medicaid fee for service were predictive of programs assisting clients in quitting, and revenue received from private or commercial managed care insurance predicted the availability of counseling that focuses specifically on social support for smoking cessation. Only revenues received from Medicaid managed care (t=2.33 *p*=.022) and private or commercial managed care insurance (t=2.369, *p*=.02) were predictive of the total number of behavioral treatments implemented.

Table 11 Percent of revenue from client/self-pay as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.068	,046	.141
Nicotine Gum	.039	.033	.236
Nicotine Lozenge	-.004	.033	.916
Nicotine Nasal Spray	-.016	.068	.816
Nicotine Inhaler	.023	.035	.522
Bupropion SR	.07	.05	.144
Varenicline	.082	.052	.114
Nortriptyline	.019	.03	.52
Any Medication	.061	.047	.194
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 12 Percent of revenue from Medicaid managed care insurance as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.086	.032	.007**
Nicotine Gum	.072	.026	.005**
Nicotine Lozenge	.039	.017	.022**
Nicotine Nasal Spray	.031	.019	.093
Nicotine Inhaler	.04	.018	.023*
Bupropion SR	.04	.021	.033*
Varenicline	.029	.041	.022*
Nortriptyline	.038	.017	.023*
Any Medication	.075	.032	.018*
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 13 Percent of revenue from Medicaid fee-for-service insurance as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.021	.012	.084
Nicotine Gum	.032	.014	.022*
Nicotine Lozenge	.021	.011	.069
Nicotine Nasal Spray	.005	.017	.755
Nicotine Inhaler	.008	.016	.599
Bupropion SR	.047	.019	.012*
Varenicline	.022	.012	.072
Nortriptyline	.026	.012	.029*
Any Medication	.038	.138	.03*
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 14 Percent of revenue from commercial fee-for-service insurance as a predictor of availability of smoking cessation medication

Medication	*B*	*SE*	*p*
Nicotine Patch	.024	.026	.368
Nicotine Gum	.076	.036	.034*
Nicotine Lozenge	.054	.029	.064
Nicotine Nasal Spray	.02	.036	.59
Nicotine Inhaler	.026	.033	.418
Bupropion SR	.127	.053	.015*
Varenicline	.052	.032	.093
Nortriptyline	.008	.03	.792
Any Medication	.106	.05	.033*
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 15 Percent of revenue from private or commercial managed care insurance as a predictor of availability of smoking cessation medication

Medication	*B*	*SE*	*p*
Nicotine Patch	.033	.033	.332
Nicotine Gum	.032	.032	.318
Nicotine Lozenge	.005	.033	.875
Nicotine Nasal Spray	.023	.042	.592
Nicotine Inhaler	.033	.042	.592
Bupropion SR	.04	.035	.254
Varenicline	.043	.035	.224
Nortriptyline	.053	.034	.112
Any Medication	.028	.034	.402
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 16 Revenue from “other” sources as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	-.016	.006	.006**
Nicotine Gum	-.013	.006	.024*
Nicotine Lozenge	-.015	.007	.035*
Nicotine Nasal Spray	-.024	.018	.184
Nicotine Inhaler	-.026	.018	.154
Bupropion SR	-.021	.006	.001***
Varenicline	-.019	.006	.003**
Nortriptyline	-.018	.01	.061
Any Medication	-.017	.006	.003**
**p is significant at the .05 level, **p is significant at the .01 level, *** p is significant at the .001 level*			

Table 17 Revenue sources as a predictor of total number of medications available

	Total Medical Treatments			
Revenue Source	*B*	*SE*	*t*	*p*
Client/self-pay	.052	.036	1.42	.159
Medicaid fee-for-service	.036	.014	2.631	.01**
Medicaid managed care	.069	.018	3.781	<.001***
Private or commercial fee-for-service insurance	.068	.032	2.108	.038*
Private or commercial managed care insurance	.052	.039	1.329	.187
"other" sources	-.021	.006	-3.426	<.001***
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*				

Table 18 Percent of revenue from client/self-pay as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.07	.039	.072
"Ask"	.287	.286	.184
"Advise"	.008	.093	.797
"Assess"	.002	.029	.949
"Assist"	.001	.001	.969
"Arrange for follow-up"	.007	.029	.8
Self-help materials	.028	.04	.493
Individual counseling focused on social support	.002	.828	.933
Individual counseling focused on problem-solving/skills training	.002	.828	.933
Have four or more individual counseling sessions available	.002	.828	.933
Offer group counseling	-.108	.159	.406
Offer telephone counseling	.019	.028	.508
Offer additional community resource referrals	-.016	.028	.563
Use Motivational Interviewing	.014	.028	.622
Provide Combined counseling and medication treatment	.012	.128	.682
Use contingent reinforcement	-.047	.117	.69
Any intensive behavioral treatments	.346	.223	.12
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 19 Percent of revenue from Medicaid managed care insurance as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.006	.017	.713
"Ask"	.019	.021	.369
"Advise"	.109	.018	.309
"Assess"	.011	.017	.507
"Assist"	.022	.017	.19
"Arrange for follow-up"	.044	.018	.017*
Self-help materials	.044	.028	.127
Individual counseling focused on social support	.034	.018	.055
Individual counseling focused on problem-solving/skills training	.028	.016	.089
Have four or more individual counseling sessions available	.032	.016	.05*
Offer group counseling	.019	.018	.286
Offer telephone counseling	-.011	.016	.931
Offer additional community resource referrals	.03	.123	.197
Use Motivational Interviewing	.026	.017	.125
Provide Combined counseling and medication treatment	.05	.02	.014*
Use contingent reinforcement	.002	.029	.957
Any intensive behavioral treatments	.027	.021	.205
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 20 Percent of revenues from Medicaid fee-for-service insurance as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.004	.012	.723
"Ask"	.965	.036	.069
"Advise"	.022	.016	.148
"Assess"	.033	.019	.086
"Assist"	.033	.016	.036*
"Arrange for follow-up"	.006	.011	.599
Self-help materials	.033	.021	.113
Individual counseling focused on social support	.017	.011	.147
Individual counseling focused on problem-solving/skills training	.016	.011	.161
Have four or more individual counseling sessions available	.01	.012	.403
Offer group counseling	.008	.014	.577
Offer telephone counseling	.005	.011	.68
Offer additional community resource referrals	.017	.015	.269
Use Motivational Interviewing	.009	.011	.391
Provide Combined counseling and medication treatment	.017	.011	.131
Use contingent reinforcement	-.014	.03	.653
Any intensive behavioral treatments	.08	.038	.036*
**p is significant at the .05 level, ** p is significant at the .01 level, ***p is significant at the .001 level*			

Table 21 Percent of revenue from commercial fee-for-service as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	-.012	.034	.725
"Ask"	.192	.115	.096
"Advise"	.133	.071	.059
"Assess"	.049	.039	.204
"Assist"	.05	.033	.125
"Arrange for follow-up"	-.033	.037	.378
Self-help materials	.012	.029	.679
Individual counseling focused on social support	.019	.025	.467
Individual counseling focused on problem-solving/skills training	.004	.026	.873
Have four or more individual counseling sessions available	-.009	.035	.805
Offer group counseling	-.181	.176	.303
Offer telephone counseling	.001	.027	.979
Offer additional community resource referrals	.035	.036	.334
Use Motivational Interviewing	-.029	.03	.341
Provide Combined counseling and medication treatment	.014	.025	.569
Use contingent reinforcement	-.029	.03	.341
Any intensive behavioral treatments	.094	.057	.101
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 22 Percent of revenue from private or commercial managed care insurance as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.061	.036	.088
"Ask"	5.113	993.117	.996
"Advise"	.022	.016	.148
"Assess"	.033	.019	.086
"Assist"	.033	.016	.036*
"Arrange for follow-up"	.006	.011	.599
Self-help materials	.033	.021	.113
Individual counseling focused on social support	.017	.011	.147
Individual counseling focused on problem-solving/skills training	.093	.048	.053
Have four or more individual counseling sessions available	.023	.033	.478
Offer group counseling	.01	.04	.812
Offer telephone counseling	.001	.033	.973
Offer additional community resource referrals	.007	.034	.828
Use Motivational Interviewing	.054	.043	.132
Provide Combined counseling and medication treatment	.044	.034	.198
Use contingent reinforcement	-.058	.123	.636
Any intensive behavioral treatments	5.2	976.944	.996
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 23 Percent of revenue from "other" sources as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	-.009	.007	.182
"Ask"	-.016	.005	.003**
"Advise"	-.02	.005	<.001***
"Assess"	-.014	.005	.005**
"Assist"	-.012	.005	.02*
"Arrange for follow-up"	-.008	.006	.172
Self-help materials	-.003	.005	.552
Individual counseling focused on social support	-.006	.005	.28
Individual counseling focused on problem-solving/skills training	0	.005	.943
Have four or more individual counseling sessions available	.002	.006	.759
Offer group counseling	.007	.007	.278
Offer telephone counseling	-.009	.006	.127
Offer additional community resource referrals	.006	.006	.306
Use Motivational Interviewing	-.007	.005	.179
Provide Combined counseling and medication treatment	-.03	.006	.03*
Use contingent reinforcement	.002	.009	.806
Any intensive behavioral treatments	-.018	.005	.001***
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 24 Revenue sources as a predictor of total number of intensive behavioral treatments available

	Total Intensive Behavioral Treatments			
Revenue Source	*B*	*SE*	*t*	*p*
Client/self-pay	.014	.043	.314	.754
Medicaid fee-for-service	.025	.016	1.508	.135
Medicaid managed care	.055	.022	2.465	.015*
Private or commercial fee-for-service insurance	-.002	.039	-.064	.949
Private or commercial managed care insurance	.108	.045	2.371	.02*
"other" sources	-.01	007	-1.349	.18
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*				

Inner Setting

Organizational Structure

About 57.8% of programs surveyed were private not-for-profit, 32.1% were public, and 2.8% were private for-profit. Approximately 51.4% of respondents reported that their program was part of a larger organization, while 21.1% said that their program was owned by another organization.

Private for-profit programs were not included in the analysis, as there were too few to draw significant conclusions (n=9). Private not-for-profit programs were significantly less likely than other programs to offer any form of medication (B=-1.02, SE=.401, *p*=.011) while public programs were more likely to do so (B=.853 , SE=.42, *p*=.04). Programs with private not-for-profit status were less likely to offer bupropion (B=-1.028, SE= .402, *p*=.011) while public programs were significantly more likely to (B=.901, SE=.419, *p*= .032). Private not-for-profit programs were significantly less likely to offer varenicline (B=-.927, SE=.403, *p*=.021). Neither private not-for-profit nor public status significantly predicted the total number of available medical treatments for smoking cessation.

In regards to behavioral treatments, private not-for-profit programs were in general significantly less likely to offer many of them, including implementing the Five A's (B=-.965, SE=.482, *p*=.045), asking about smoking status (B=-1.126, SE=.451, *p*=.012), advising clients to quit (B=-1.317, SE=.428, *p*=.002), assessing clients willingness to quit (B=-1.253, SE=.428, *p*<.001), and assisting clients in quitting (B=-1.3, SE=.408, *p*=.001). They were also less likely to implement individual counseling that focused on problem solving or skills training, motivational interviewing, and offer

combined medication and counseling treatment for smoking cessation. Conversely, programs that were public were more likely to ask clients about smoking, advise clients to quit, assess client willingness to quit, assist them in quitting, and arrange for follow-up. In addition to these, they were significantly more likely than other programs to provide self-help materials, offer individual counseling that focuses both on problem solving/skills training and social support, telephone counseling, motivational interviewing, and combined counseling and medication treatment for smoking cessation. Public programs had significantly more behavioral treatments available (t=3.881 p<.001) than other programs while private not-for-profit programs had significantly less (t=-2.888, p=.005).

Being part of a larger organization was highly significantly correlated with availability of nicotine patch, nicotine gum, Bupropion SR, and varenicline. Being owned by another organization was significantly correlated with nicotine patch, Bupropion SR, and varenicline. Each was highly significantly correlated with the total number of medications available. The relationship between these two factors and smoking cessation treatment availability was much more evident with behavioral treatments. The only behavioral treatments with which being part of a larger organization was not correlated were implementation of the Five A's, offering group counseling, and use of contingent reinforcement. Being owned by another organization was a less effective prognosticator, as it did not predict implementation of the Five A's, arranging for a follow-up smoking cessation appointment, availability of self-help materials, having for or more counseling sessions available, group counseling. Use of MI, or use of contingent reinforcement.

Table 25 Organization type as a predictor of availability of medications for smoking cessation

	Nicotine Patch			*Nicotine Gum*		
Organization Type	*B*	*SE*	*p*	*B*	*SE*	*p*
Private for-profit	1.869	1.236	.134	1.358	1.242	.274
Private not-for-profit	-.623	.396	.116	-.488	.406	.229
Public	.439	.415	.289	.509	.424	.23
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Nicotine Lozenge			*Nicotine Nasal Spray*		
Organization Type	*B*	*SE*	*p*	*B*	*SE*	*p*
Private for-profit	1.869	1.236	.134	N/A	N/A	N/A
Private not-for-profit	-.721	.449	.109	.411	.735	.576
Public	.508	.461	.271	-.545	.83	.511
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Nicotine Inhaler			*Bupropion SR*		
Organization Type	*B*	*SE*	*p*	*B*	*SE*	*p*
Private for-profit	1.684	1.274	.186	N/A	N/A	N/A
Private not-for-profit	.583	.719	.417	-1.028	.402	.011*
Public	-1.549	1.075	.15	.901	.419	.032*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Varenicline			*Nortrtiptyline*		
Organization Type	*B*	*SE*	*P*	*B*	*SE*	*p*
Private for-profit	N/A	N/A	N/A	N/A	N/A	N/A
Private not-for-profit	-.927	.403	.021*	-.387	.497	.436
Public	.73	.418	.08	-.12	.538	.823
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Medication—Any			*Medication--Sum*		
Organization Type	*B*	*SE*	*P*	*B*	*SE*	*p*
Private for-profit	N/A	N/A	N/A	N/A	N/A	N/A
Private not-for-profit	-1.02	.401	.011*	.081	.077	.29
Public	.853	.422	.04*	-.123	.075	.099
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

Table 26 Private not-for-profit status as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	-.965	.482	.045*
"Ask"	-1.126	.451	.012*
"Advise"	-1.317	.428	.002**
"Assess"	-1.253	.428	.003**
"Assist"	-1.3	.408	.001***
"Arrange for follow-up"	-.813	.436	.062
Self-help materials	-.143	.404	.723
Individual counseling focused on social support	-.742	.407	.068
Individual counseling focused on problem-solving/skills training	-.815	.415	.05*
Have four or more individual counseling sessions available	.005	.511	.993
Offer group counseling	-.534	.594	.369
Offer telephone counseling	-.535	.428	.21
Offer additional community resource referrals	.908	.409	.027*
Use Motivational Interviewing	-.94	.401	.019*
Provide Combined counseling and medication treatment	-1.078	.424	.011*
Use contingent reinforcement	-.644	.79	.415
Any intensive behavioral treatments	-1.126	.428	.008*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 27 Public status as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.862	.482	.074
"Ask"	2.15	.648	.001***
"Advise"	1.954	.536	<.001***
"Assess"	1.9	.536	<.001***
"Assist"	1.65	.449	<.001***
"Arrange for follow-up"	.882	.446	.048*
Self-help materials	.944	.466	.043*
Individual counseling focused on social support	.983	.425	.021*
Individual counseling focused on problem-solving/skills training	1.482	.438	.002*
Have four or more individual counseling sessions available	.529	.518	.308
Offer group counseling	1.041	.6	.083
Offer telephone counseling	1	.443	.024*
Offer additional community resource referrals	-.087	.426	.838
Use Motivational Interviewing	1.32	.431	.002*
Provide Combined counseling and medication treatment	1.267	.437	.004**
Use contingent reinforcement	1.116	.794	.159
Any intensive behavioral treatments	1.792	.546	.001**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 28 Program ownership as a predictor of availability of smoking cessation medications

	Nicotine Patch			*Nicotine Gum*		
	B	*SE*	*p*	*B*	*SE*	*p*
Part of a larger organization	1.59	.426	<.001***	1.459	.441	.001***
Owned by another organization	1.015	.225	.035*	.923	.479	.054
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Nicotine Lozenge			*Nicotine Nasal Spray*		
	B	*SE*	*p*	*B*	*SE*	*p*
Part of a larger organization	1.061	.476	.026*	.183	.700	.068
Owned by another organization	1.389	.501	.006	-.814	1.088	.454
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Nicotine Inhaler			*Bupropion SR*		
	B	*SE*	*p*	*B*	*SE*	*p*
Part of a larger organization	.385	.676	.569	1.851	.437	<.001***
Owned by another organization	-.074	.828	.929	1.451	.507	.004**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Varenicline			*Nortriptyline*		
	B	*SE*	*p*	*B*	*SE*	*p*
Part of a larger organization	1.627	.433	<.001***	1.256	.558	.024*
Owned by another organization	1.118	.484	.021*	.596	.558	.285
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*						

	Any Medications		
	B	*SE*	*p*
Part of a larger organization	1.855	.426	<.001***
Owned by another organization	1.657	.551	.003**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

	Total number of medications available			
	B	*SE*	*t*	*p*
Part of a larger organization	1.226	.340	3.606	<.001***
Owned by another organization	1.884	.278	7.764	<.001***
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 29 Private not-for-profit status as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	-.965	.482	.045*
"Ask"	-1.126	.451	.012*
"Advise"	-1.317	.428	.002**
"Assess"	-1.253	.428	.003**
"Assist"	-1.3	.408	.001***
"Arrange for follow-up"	-.813	.436	.062
Self-help materials	-.143	.404	.723
Individual counseling focused on social support	-.742	.407	.068
Individual counseling focused on problem-solving/skills training	-.815	.415	.05*
Have four or more individual counseling sessions available	.005	.511	.993
Offer group counseling	-.534	.594	.369
Offer telephone counseling	-.535	.428	.21
Offer additional community resource referrals	.908	.409	.027*
Use Motivational Interviewing	-.94	.401	.019*
Provide Combined counseling and medication treatment	-1.078	.424	.011*
Use contingent reinforcement	-.644	.79	.415
Any intensive behavioral treatments	-1.126	.428	.008*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 30 Public status as a predictor of availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	.862	.482	.074
"Ask"	2.15	.648	.001***
"Advise"	1.954	.536	<.001***
"Assess"	1.9	.536	<.001***
"Assist"	1.65	.449	<.001***
"Arrange for follow-up"	.882	.446	.048*
Self-help materials	.944	.466	.043*
Individual counseling focused on social support	.983	.425	.021*
Individual counseling focused on problem-solving/skills training	1.482	.438	.002*
Have four or more individual counseling sessions available	.529	.518	.308
Offer group counseling	1.041	.6	.083
Offer telephone counseling	1	.443	.024*
Offer additional community resource referrals	-.087	.426	.838
Use Motivational Interviewing	1.32	.431	.002*
Provide Combined counseling and medication treatment	1.267	.437	.004**
Use contingent reinforcement	1.116	.794	.159
Any intensive behavioral treatments	1.792	.546	.001**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 31 “Part of a larger organization” as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A’s	.722	.488	.139
“Ask”	2.386	.513	<.001***
“Advise”	2.191	.454	<.001***
“Assess”	1.91	.44	<.001***
“Assist”	1.535	.416	<.001***
“Arrange for follow-up”	1.292	.471	.006**
Self-help materials	1.413	.426	.001***
Individual counseling focused on social support	1.53	.441	.001***
Individual counseling focused on problem-solving/skills training	1.526	.453	.001***
Have four or more individual counseling sessions available	1.5	.601	.013*
Offer group counseling	.835	.635	.179
Offer telephone counseling	1.336	.47	.04*
Offer additional community resource referrals	1.159	.419	.006*
Use Motivational Interviewing	1.59	.426	<.001***
Provide Combined counseling and medication treatment	1.883	.486	<.001***
Use contingent reinforcement	.916	.86	.217
Any intensive behavioral treatments	2.154	.461	<.001***
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 32 “Owned by another organization” as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A’s	.926	.511	.076
“Ask”	1.926	.776	.013*
“Advise”	1.456	.591	.013*
“Assess”	1.418	.591	.016*
“Assist”	1.3	.585	.01*
“Arrange for follow-up”	.932	.492	.058
Self-help materials	.904	.551	.101
Individual counseling focused on social support	1.099	.482	.023*
Individual counseling focused on problem-solving/skills training	1.27	.486	.009**
Have four or more individual counseling sessions available	-.421	.678	.535
Offer group counseling	.131	.705	.832
Offer telephone counseling	1.107	.489	.024*
Offer additional community resource referrals	1.182	.592	.046*
Use Motivational Interviewing	.561	.473	.235
Provide Combined counseling and medication treatment	1.572	.496	.002**
Use contingent reinforcement	.434	.872	.619
Any intensive behavioral treatments	1.711	.656	.009**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Perceived smoking culture

Staff smoking culture was not predictive of the availability of *any* medications for smoking cessation. However, it significantly portended employment of many behavioral treatments, including: implementation of the Five A’s as well as each of the individual steps (Ask, Advise, Assess, Assist, Arrange for follow-up), provision of self-help materials specifically for smoking cessation, individual counseling that focuses specifically on social support for smoking cessation, individual counseling that focuses on problem-solving/skills training for smoking cessation, group counseling specifically

for smoking cessation, quitline support for smoking cessation, use of motivational interviewing techniques to enhance motivation to quit, and provision of combined counseling and medical treatment specifically for smoking cessation.

Program's current smoking policy

All respondents stated that their program did not allow indoor smoking. However, 70.2% of programs permitted their patients to smoke outdoors, 63.5% allowed outdoor smoking for employees, and 67.3% indicated that visitors were allowed to smoke outdoors. Of those, 58.9% had a designated outdoor smoking area for patients. and 68.2% had designated outdoor smoking areas for employees. Of the 34 participants that reported that their program owned a vehicle, 100% stated that neither patients, employees, nor visitors were permitted to smoke in them.

Perceived smoking culture

While not an indicator of availability of *any* medications for smoking cessation, staff smoking culture was significantly related to implementation of many behavioral treatments. The strongest correlations were with implementation of the Five A's (B=.454, SE=, $p<.01$) and "offer group counseling specifically for smoking cessation (B=.402, SE=.111, $p<.01$).In addition to these, staff smoking culture each of the individual steps of the Five A's (Ask, Advise, Assess, Assist, Arrange for follow-up), provision of self-help materials specifically for smoking cessation, individual counseling that focuses specifically on social support for smoking cessation, individual counseling that focuses on problem-solving/skills training for smoking cessation, group counseling specifically for smoking cessation, quitline support for smoking cessation, use of

motivational interviewing techniques to enhance motivation to quit, and provision of combined counseling and medical treatment specifically for smoking cessation.

Table 33 Perceived smoking culture as a predictor of availability of medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.089	.058	.127
Nicotine Gum	.094	.06	.117
Nicotine Lozenge	.091	.065	.162
Nicotine Nasal Spray	-.049	.107	.645
Nicotine Inhaler	.079	.098	.421
Bupropion SR	.062	.057	.28
Varenicline	/095	.059	.107
Nortriptyline	.066	.074	.366
Any Medication	.085	.058	.139
**p is significant at the .05 level, **p is significant at the .01 level, **p is significant at the .001 level*			

Table 32 Perceived smoking culture as a predictor of total number of smoking cessation medications available

	Total number of medications available			
Perceived smoking culture	*B*	*SE*	*t*	*p*
	.11	.073	1.506	.135
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 35 Perceived smoking culture as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.454	104	<.001***
"Ask"	.195	.07	.006**
"Advise"	.202	.067	.002**
"Assess"	.294	.076	<.001***
"Assist"	.235	.067	.001***
"Arrange for follow-up"	.292	.077	<.001***
Self-help materials	.141	.065	.029*
Individual counseling focused on social support	.274	.072	<.001***
Individual counseling focused on problem-solving/skills training	.27	.072	<.001***
Have four or more individual counseling sessions available	.348	.093	<.001***
Offer group counseling	.402	.111	<.001***
Offer telephone counseling	.197	.068	.004**
Offer additional community resource referrals	-.054	.793	.373
Use Motivational Interviewing	.184	.063	.004**
Provide Combined counseling and medication treatment	.169	.064	.009**
Use contingent reinforcement	.543	.169	.001***
Any intensive behavioral treatments	.183	.067	.006**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 36 Perceived smoking culture as a predictor of total number of intensive behavioral treatments available

	Total number of intensive behavioral treatments available			
Perceived smoking culture	*B*	*SE*	*t*	*p*
	.463	.073	6.354	<.001***
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Program Size

In regards to number of employees, number of clients served, and caseload size, the 3 IQR rule was used to find and eliminate outliers. On average, programs reported having about 62 employees (M=62.36, SD=132.7). The mean number of clients seen by each program was 670.97 (SD=843.993). Among employees who carried caseloads, the mean caseload size was 51.985 (SD=33.45). A program's number of employees predicted the availability of nicotine patches, nicotine gum, Bupropion SR, and Varenicline, as well as *any* medication for smoking cessation. Total number of clients served only predicted Bupropion SR, Varenicline, Nortriptyline, and *any* medication. Finally, average caseload predicted the availability of nicotine gum, nicotine lozenges, Bupropion SR, Varenicline, and *any* medication.

For the most part, these factors were not highly predictive of availability of behavioral treatments for smoking cessation. The number of employees at a program only predicted advising clients to quit, and providing combined counseling and medication treatment for smoking cessation. The number of clients a program served predicted each of these, as well as having four or more individual counseling sessions available for smoking cessation. Reported average caseload of employees predicted advising clients to quit, assisting clients in quitting, and providing combined counseling and medication treatment. None were predictive of the availability of *any* intensive behavioral treatment.

Table 37 Number of employees as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.011	.004	.016*
Nicotine Gum	.007	.003	.029*
Nicotine Lozenge	.003	.002	.108
Nicotine Nasal Spray	.002	.002	.218
Nicotine Inhaler	.003	.002	.061
Bupropion SR	.01	.004	.02*
Varenicline	.007	.003	.03*
Nortriptyline	.003	.002	.083
Any Medication	.011	.005	.026*
**p is significant at the .05 level, **p is significant at the .01 level, **p is significant at the .001 level*			

Table 38 Number of clients as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	0	0	.091
Nicotine Gum	.001	0	.051
Nicotine Lozenge	0	0	.731
Nicotine Nasal Spray	0	.001	.573
Nicotine Inhaler	0	.001	.757
Bupropion SR	.001	0	.013*
Varenicline	.001	0	.03*
Nortriptyline	.001	0	.042*
Any Medication	.001	0	.024*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the.001 level*			

Table 39 Average caseload as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.015	.008	.057
Nicotine Gum	.017	.008	.039*
Nicotine Lozenge	.025	.009	.007**
Nicotine Nasal Spray	.01	.01	.345
Nicotine Inhaler	.013	.011	226
Bupropion SR	.038	.011	.001***
Varenicline	.032	.01	.002**
Nortriptyline	.013	.009	.151
Any Medication	.025	.009	.007**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 40 Program size as a predictor of total smoking cessation medications available

	Total Number of Medications			
	B	*SE*	*t*	*p*
Number of Employees	1.764	.278	6.34	<.001***
Number of Clients	.001	0	1.939	.056
Average Caseload	.349	.533	.656	.514
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*				

Table 41 Number of employees as a predictor of availability of behavioral treatments for smoking cessation

Behavioral Treatment	*B*	*SE*	*p*
Implement the Five A's	.001	.002	.782
"Ask"	.012	.007	.085
"Advise"	.013	.006	.038*
"Assess"	.002	.002	.329
"Assist"	.002	.002	.28
"Arrange for follow-up"	.001	.002	.719
Self-help materials	.005	.003	.186
Individual counseling focused on problem-solving/skills training	.004	.002	.069
Have four or more individual counseling sessions available	-.002	.003	.564
Offer group counseling	-.003	.004	.508
Offer telephone counseling	-.001	.002	.765
Offer additional community resource referrals	-.001	.002	.728
Use Motivational Interviewing	.002	.002	.176
Provide Combined counseling and medication treatment	.011	.004	.011*
Use contingent reinforcement	-.011	.014	.423
Any intensive behavioral treatments	.011	.006	.065
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 42 Number of clients as a predictor of availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	0	0	.226
"Ask"	.001	0	.082
"Advise"	.001	0	.018*
"Assess"	.001	0	089
"Assist"	0	0	.096
"Arrange for follow-up"	0	0	.108
Self-help materials	0	0	.37
Individual counseling focused on problem-solving/skills training	0	0	.114
Have four or more individual counseling sessions available	.001	0	.011*
Offer group counseling	-.001	.001	.339
Offer telephone counseling	0	0	.218
Offer additional community resource referrals	0	0	.724
Use Motivational Interviewing	0	0	.146
Provide Combined counseling and medication treatment	.001	0	.014*
Use contingent reinforcement	0	.001	.878
Any intensive behavioral treatments	0	0	.174
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 43 Average caseload as a predictor of availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	.01	.009	.245
"Ask"	.012	.009	.173
"Advise"	.023	.009	.016*
"Assess"	.01	.008	.226
"Assist"	.018	.008	.03*
"Arrange for follow-up"	.015	.008	.058
Self-help materials	.012	.009	.073
Individual counseling focused on social support	.014	.008	.073
Individual counseling focused on problem-solving/skills training	.014	.018	.073
Have four or more individual counseling sessions available	.012	.009	.178
Offer group counseling	.003	.01	.755
Offer telephone counseling	.006	.008	.475
Offer additional community resource referrals	.003	.008	.714
Use Motivational Interviewing	.005	.007	.477
Provide Combined counseling and medication treatment	.03	.01	.003**
Use contingent reinforcement	0	.014	.977
Any intensive behavioral treatments	.016	.019	.074
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 44 Program size as a predictor of number of intensive behavioral treatments available

	B	*SE*	*t*	*p*
Number of employees	.003	.002	1.137	.258
Number of Clients	6.091E-5	0	1.177	.242
Average Caseload	-8.782E-5	.001	-.074	.941
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Attitudes toward smoking cessation treatment

Overall, respondents tended to have moderate views about smoking cessation treatment for PLWHA in their programs. The scale contained four items, each with a five point Likert scale ranging from *Strongly Disagree* to *Strongly Agree*. The mean total for the scale measuring participants' attitudes toward smoking cessation was 14.8 (SD=1.6). The mean score per item was 3.7. Participants perceived their coworkers as having similarly moderate opinions on the importance of smoking cessation as a part of treatment for PLWHA (M=16.5882, SD=2.02). The mean score per item for coworkers' attitudes was 3.3.

Managerial openness toward the use of EBTs proved to be important predictors of availability of medical treatments for smoking cessation, as it significantly correlated with availability of *any* medication, as well as many of the individual medications . These included: nicotine patch, nicotine gum, Bupropion SR, varenicline, and nortriptyline. Programs whose managers were more open towards the use of EBTs were also significantly more likely to offer nicotine lozenges. Managerial openness to EBTs also significantly predicted total number of medical treatments provided ($t=3.657$, $p<.001$).

As with medical treatments, managerial openness significantly predicted implementation of the Five A's, asking if the client currently smokes, advising the client to quit, assessing clients' willingness to quit, arranging for follow-up, availability of individual counseling that focuses on social support specifically for smoking cessation, individual counseling that focuses on problem-solving specifically for smoking cessation, four or more individual counseling sessions specifically for smoking cessation, use of motivational interviewing techniques to enhance motivation to quit, and provision of combined behavioral and medical treatment specifically for smoking cessation. As with

medical treatments, managerial openness (t=5.482, *p*<.001) to use of EBTs predicted the total number of behavioral treatments programs provided.

Table 45 Manager attitudes toward smoking cessation as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.307	.506	.544
Nicotine Gum	.059	.516	.908
Nicotine Lozenge	-.512	.586	.382
Nicotine Nasal Spray	-1.283	1.018	.208
Nicotine Inhaler	-.876	.886	.347
Bupropion SR	.075	.501	.881
Varenicline	.688	.516	.182
Nortriptyline	1.19	.657	.07
Any Medication	.518	.504	.304
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 46 Coworker attitudes toward smoking cessation as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.365	.502	.467
Nicotine Gum	.065	.511	.899
Nicotine Lozenge	-.683	.592	.248
Nicotine Nasal Spray	-1.84	1.044	.078
Nicotine Inhaler	-2.369	1.051	.024*
Bupropion SR	.093	.498	.852
Varenicline	.296	.503	.556
Nortriptyline	.606	.636	341
Any Medication	.174	.293	.724
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 47 Manager openness to EBTs as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.168	.064	.009**
Nicotine Gum	.199	.068	.003**
Nicotine Lozenge	.168	.07	.016*
Nicotine Nasal Spray	.128	.102	.212
Nicotine Inhaler	.119	.097	.222
Bupropion SR	.218	.069	.002**
Varenicline	.185	.066	.005**
Nortriptyline	.274	.086	.001***
Any Medication	.194	.066	.003**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 48 Attitudes toward smoking cessation as a predictor of total number of smoking cessation medications available

	B	*SE*	*t*	*p*
Manager attitudes	.199	.653	.305	.761
Coworker attitudes	-.162	.648	-.25	.803
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 49 Openness to EBTs as a predictor of total number of smoking cessation medications available

	B	*SE*	*t*	*p*
Manager openness	.269	.061	3.657	<.001***
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 50 Manager attitudes toward smoking cessation as a predictor of the availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	1.753	.641	.006**
"Ask"	1.616	.633	.011*
"Advise"	.864	.538	.108
"Assess"	1.885	.62	.002**
"Assist"	1.306	.542	.016*
"Arrange for follow-up"	.862	.553	.119
Self-help materials	1.285	.589	.029*
Individual counseling focused on social support	.675	.519	.193
Individual counseling focused on problem-solving/skills training	.796	.53	.133
Have four or more individual counseling sessions available	1.589	.665	.017*
Offer group counseling	1.994	.782	.011*
Offer telephone counseling	1.58	.587	.007**
Offer additional community resource referrals	.641	.55	.243
Use Motivational Interviewing	1.898	.589	.001***
Provide Combined counseling and medication treatment	.583	.526	.268
Use contingent reinforcement	3.999	1.265	.002**
Any intensive behavioral treatments	1.884	.627	.003**
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 51 Coworker attitudes toward smoking cessation as a predictor of the availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	1.137	.598	.057
"Ask"	.837	.575	.145
"Advise"	-.157	.506	.757
"Assess"	1.01	.551	.067
"Assist"	.892	.518	.085
"Arrange for follow-up"	.427	.539	.429
Self-help materials	.9	.563	.11
Individual counseling focused on social support	.465	.51	.361
Individual counseling focused on problem-solving/skills training	.414	.516	.422
Have four or more individual counseling sessions available	.38	.625	.543
Offer group counseling	.464	.724	.521
Offer telephone counseling	.5	.535	.351
Offer additional community resource referrals	-.308	.525	.557
Use Motivational Interviewing	1.765	.586	.003**
Provide Combined counseling and medication treatment	.451	.52	.385
Use contingent reinforcement	.707	.937	.451
Any intensive behavioral treatments	1.355	.587	.021*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 52 Manager openness to the use of EBTs as a predictor of the availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	.215	.075	.004**
"Ask"	.209	.073	.004**
"Advise"	.2	.069	.004**
"Assess"	.214	.071	.002**
"Assist"	.223	.069	.003**
"Arrange for follow-up"	.234	.073	.001***
Self-help materials	.158	.067	.019*
Individual counseling focused on social support	.222	.07	.002*
Individual counseling focused on problem-solving/skills training	.228	.071	.001***
Have four or more individual counseling sessions available	.294	.087	.001***
Offer group counseling	.415	.112	<.001***
Offer telephone counseling	.134	.064	.038*
Offer additional community resource referrals	.091	.062	.142
Use Motivational Interviewing	.27	.075	<.001***
Provide Combined counseling and medication treatment	.177	.066	.008**
Use contingent reinforcement	.405	.13	.002**
Any intensive behavioral treatments	.264	.077	.001***
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 53 Attitudes toward smoking cessation as a predictor of total number of intensive behavioral treatments for smoking cessation

	B	*SE*	*t*	*p*
Manager attitudes	2.371	.731	3.241	.033*
Coworker attitudes	1.358	.75	1.811	.073
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 54 Manager openness to EBTs as a predictor of total number of intensive behavioral treatments

	B	*SE*	*t*	*p*
Manager openness	.412	.076	5.453	<.001***
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Organizational Support

Organizational support for outside training was defined by whether or not was defined by whether or not programs provided funding for employees to attend conferences, outside training, or continuing education. It was not significantly related with availability of most medical treatments for smoking cessation, with nicotine gum being the lone exception. It did not significantly predict total number of medical treatments offered. However, programs with higher levels of organizational support were more likely to ask if clients smoke, advise them to quit, assess their willingness to quit, provide self-help materials for smoking cessation, offer individual counseling that focuses on social support specifically for smoking cessation, and provide quitline support for smoking cessation. Accordingly, organizational support significantly predicted both total number of behavioral treatments available (t=2.644, *p*=.009) *and* total number of intensive behavioral treatments available (t=3.091, *p*=.003).

On the whole both encouragement and requirement of outside training were relatively good indicators of programs' ability to provide smoking cessation treatments. Programs that encouraged their employees to seek training as well as programs that required outside training were more likely to offer the nicotine patch, nicotine gum, nicotine lozenge, Bupropion SR, and Varenicline. They were significantly more likely

than other programs to offer at least one form of medical treatment. Programs that encouraged (t=2.705, *p*=.008) or required (t=2.514, *p*=.013) outside training had significantly more different types of medical treatment available.

This was also evident with behavioral treatments, as both of these factors predicted implementation of the first four steps of the Five A's, availability of individual counseling focused on social support, individual counseling that focuses on problem solving/skills training, use of motivational interviewing techniques for increasing motivation to quit, and provision of combined counseling and medical treatment for smoking cessation. Individually, the variable *encouragement of training* significantly predicted arranging for a follow-up visit and offering group counseling specifically for smoking cessation, while requiring training significantly predicted availability of self-help materials for smoking cessation.

Requirement of training and encouragement of training were both significantly predictive of both total number of behavioral treatments available (t=3.165, *p*=.002; t=4.327, *p*<.001) and total number of intensive behavioral treatments available(t=3.821 *p*<.001; t=4.348, *p*<.001).

Table 55 Organizational Support as a predictor of availability of smoking cessation medications

Medication	*B*	*SE*	*p*
Nicotine Patch	.445	.254	.08
Nicotine Gum	.636	.285	.026*
Nicotine Lozenge	.394	.302	.192
Nicotine Nasal Spray	-.126	.413	.76
Nicotine Inhaler	.152	.428	.723
Bupropion SR	.291	.246	.236
Varenicline	.252	.248	.309
Nortriptyline	-.2	.293	.495
Any Medication	.402	.243	.097
p is significant at the .05 level, **p is significant at the .01 level,* p is significant at the .001 level*			

Table 56 Organizational support as a predictor of total number of smoking cessation medications available

	B	*SE*	*t*	*p*
Organizational Support	.397	.209	1.285	.201
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 57 Organizational support as a predictor of availability of behavioral treatments for smoking cessation

	B	*SE*	*p*
Implement the Five A's	.416	.326	.201
"Ask"	.659	.249	.008**
"Advise"	.605	.245	.013*
"Assess"	.582	.244	.017*
"Assist"	.451	.249	.07
"Arrange for follow-up"	.607	.312	.051
Self-help materials	.616	.245	.012*
Individual counseling focused on social support	.671	.285	.019*
Individual counseling focused on problem-solving/skills training	.565	.284	.047*
Have four or more individual counseling sessions available	.339	.343	.333
Offer group counseling	.23	.391	.556
Offer telephone counseling	.747	.325	.022*
Offer additional community resource referrals	.184	.242	.448
Use Motivational Interviewing	.381	.251	.129
Provide Combined counseling and medication treatment	.795	.323	.011*
Use contingent reinforcement	17.515	4423.857	.997
Any intensive behavioral treatments	.539	.243	.027*
**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Table 58 Organizational support as a predictor of total number of intensive behavioral treatments available

	B	*SE*	*t*	*p*
Organizational Support	.881	.35	2.516	.013*
	**p is significant at the .05 level, **p is significant at the .01 level, ***p is significant at the .001 level*			

Chapter 5 Discussion

Overall Summary

Less than half (48.6%) of programs surveyed offered smoking cessation medications. On average, programs offered 2.18 medical treatments for smoking cessation, with the most common being Bupropion, the nicotine patch, varenicline, and nicotine gum. Far more programs offered some form of behavioral treatment (86%), but only 61.5% reported offering intensive behavioral treatments. As with previous research, implementation of each step of the Five A's declined after "Assess the client's willingness to quit" (Vijayaraghavan et al., 2017). This research demonstrates clear gaps exist in the provision of smoking cessation treatment at HIV programs across the US.

Outer Setting factors

Many external factors proved to be important predictors of smoking cessation availability. The Ryan White Care Act, specifically parts C and D, was connected with the availability of numerous medical and behavioral treatments. Funding from Part C was predictive of the nicotine patch, nicotine gum, Bupropion SR, and varenicline, while funding from Part D was an indicator of availability of Bupropion SR and varenicline. Each significantly predicted the provision of *any* medication.

In regards to behavioral treatments for smoking cessation funding from Ryan White Part C in particular was indicative of the distribution of the vast majority vast majority of them, including both individual counseling focused on social support and problem solving or skills training, and the use of motivational interviewing techniques for smoking cessation. Additionally, funding from Ryan White part C or Ryan White part D was an indicator of whether programs advised clients to quit smoking, assessed their willingness to quit, or provided combined medical and behavioral treatment for smoking cessation.

Funding from Ryan White Part C and Part D may influence availability of smoking cessation treatments via the grants they provide. Ryan White Part C grants funding to community-based organizations via Early Intervention Services grants. Additionally, this funding can come in the form of capacity development grants aimed at assisting public and nonprofit entities in their efforts to strengthen their primary health care services for PLWHA (Johnson & Heisler, 2015). This may give programs more flexibility to be able to provide smoking cessation services for their clients and may also partially explain why public and private non-profit programs were significantly correlated with treatment availability. Similar to Ryan White Part C, Ryan White part D focuses on improving primary health services for PLWHA at public and nonprofit programs. The key difference is that Part D funding is distributed at the state level, and focuses on services for women, infants, and children (Johnson & Heisler, 2015).

Revenue sources in general were not strong predictors of treatments for smoking cessation. However, Medicaid managed care insurance as well as Medicaid fee-for-service insurance were indicators for many treatments. In particular, Medicaid managed

care predicted the availability of all but one medication for smoking cessation (nicotine nasal spray). Medicaid fee for service insurance predicted the availability of three medications (nicotine gum, Bupropion SR, nortriptyline). The effect of funding from Medicaid was less evident on behavioral treatments. Revenue from Medicaid managed care was only a slight significant predictor of three such treatments (Arrange for follow-up, have four or more individual counseling sessions available, use combined medical and behavioral treatment), as well as the total number of intensive behavioral treatments available. Similarly, funds from Medicaid fee-for-service insurance merely indicated the availability of two (assisting clients in quitting, and *any* intensive behavioral treatment). In substance use treatment centers, the odds of offering formal smoking cessation treatment increase as Medicaid revenues increase (Knudsen & Roman, 2015).

The relationship between Medicaid and availability of smoking cessation medications may be explained by the effect of the Affordable Care Act (ACA). In 2014, the ACA mandated that Medicaid programs cover *all* medications for smoking cessation. This in turn led to wider access to these medications among vulnerable populations. As a result there was a 24% increase in new smoking cessation medication use among substance users in states that expanded Medicaid (Maclean, Pesko, & Hill, 2019). People who are in treatment for substance use disorders in states that have expanded Medicaid are more likely to be screened for tobacco use and have higher rates of smoking cessation medication use than those in states that had not expanded Medicaid (Yip et al., 2020). This indicates that the relationship between Medicaid

funding and availability of smoking cessation medication for PLWHA may be mediated by state Medicaid expansion status.

While ACA requires state Medicaid programs to cover all smoking cessation medications, there is no such directive for behavioral treatments. Under ACA, states have no responsibility to cover individual counseling, group counseling, or telephone counseling for non-pregnant adults (Centers for Disease Control and Prevention, 2020). This may explain why Medicaid revenues were less indicative of the availability of behavioral treatments for smoking cessation than they were medications.

Inner Setting

Structural Factors

Overall, program structure had a significant but mixed relationship with smoking cessation treatment availability. The sample size of private for-profit programs was too small to be analyzed. However, In general, private not-for-profit programs were significantly less likely to offer smoking cessation treatment for clients than other types of entities, including Bupropion and varenicline, or *any* medication. The same was true of behavioral treatments, as many, including implementation of the Five A's, both types of individual counseling, and combined medication and counseling treatment were less likely to be offered at private not-for-profit programs than public ones.

. Consistent with previous research on substance use treatment facilities, publicly owned programs were more likely to offer smoking cessation services (Cohn, Elmasry, & Niaura, 2017). Public status was particularly indicative of the number of *intensive* behavioral treatments available, as well as *any* form of medication, and Bupropion SR. Publicly owned programs may be owned by the government, or receive funding from

governments or block grants, which may enable them to provide more smoking cessation services (Knudsen, 2017; Shi & Cummins, 2015).

While public and private not-for-profit status had mixed effects on treatments for smoking cessation, programs' networks were highly predictive of both behavioral and medical treatments. This research demonstrates that being part of a larger organization significantly relates to the ability to provide behavioral treatment for smoking cessation, except for implementing the Five A's, offering group counseling, and using contingent reinforcement. Programs that were owned by another organization were significantly correlated with asking about smoking status, advising clients to quit, assessing willingness to quit, assisting client in quitting, providing both types of individual counseling, offering additional community resources, and providing combined medical and counseling treatment. Additionally, there was a significant positive correlation between being owned by another organization and the number of intensive behavioral treatments offered. Connection with or ownership by other organizations may reflect greater availability of funding and resources, which may allow programs that are a part of or owned by another organization to provide more smoking cessation services to their clients.

The number of employees who carry a caseload was only slightly predictive of four of the seven recommended medications (Nicotine patch, nicotine gum, Bupropion SR, and Varenecline) and availability of *any* medications. However, it was moderately predictive of the total number of medical treatments available. Similarly, average caseload for employees that carry a caseload was a slight but highly significant predictor of the availability of nicotine gum, nicotine lozenge, Bupropion SR, and

varenicline, as well as *any* medication. The number of employees with a caseload was a strong predictor of the total number of medications as well. This is possibly because a program's ability to hire employees may be directly indicative of the funding available. On the other hand, with rare exceptions, each of these was not predictive of most behavioral treatments for smoking cessation. This contrasts with previous data indicating that caseload and time constraints were significant factors in providers ability to deliver smoking cessation interventions to HIV-positive smokers (Horvath et al., 2012).

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Program Culture

While the number of employees and average caseload among employees who carry a caseload were not strong predictors, program culture proved to be important in determining ability to provide behavioral smoking cessation treatments. For the purposes of this study, program culture was defined as managerial and staff attitudes toward smoking cessation and the use of new EBTs. Manager attitudes toward the smoking cessation were not predictive of any individual medication or the availability of *any* medication, and coworker or staff attitudes toward smoking cessation had a significant negative correlation with the availability of nicotine inhalers. However, manager openness toward the use of EBTs had slight but highly significant correlations with the availability of each medication other than nicotine lozenges, nicotine nasal sprays, and nicotine inhalers

The relationship between program culture and smoking cessation availability was much stronger with behavioral treatments. Manager attitudes, and especially openness to EBTs had strongly significant relationships with availability of behavioral treatments.

Furthermore, such attitudes were highly correlated with the total number of intensive behavioral treatments available. Coworker attitudes toward smoking cessation were less signifying of availability of behavioral treatments, as the only significant links were between coworker attitudes toward smoking cessation and use of motivational interviewing as well as total number of intensive behavioral treatments available.

Manager openness may be related to higher rates of implementation of behavioral treatments via employee self-efficacy. In programs where staff are encouraged to try new treatments, employees report higher interest in implementing MI(Johnson, Young, Suresh, et al 2002; Liddle, Rowe, Gonzalez, Henderson 2010). Additionally, employees demonstrate higher skill improvement in MI after training, which leads to higher rates of implementation (Johnson, Young et al 2002). Thus, focusing on establishing a culture of openness to EBTs may be an effective way to promote integration of smoking cessation services into HIV care.

Outside Training

While organizational support was not a strong indicator of most treatments, programs that encouraged or required employees to seek outside training or continuing education opportunities were significantly more likely to offer smoking cessation for clients. Importantly, these programs offered significantly more medical and intensive behavioral treatments than others. HIV-positive smokers may benefit from programs that encourage their employees to seek outside training. Among physicians, training on smoking cessation increases their adherences to tobacco guidelines (Caplan, Stout, & Blumenthal, 2011). In turn, patients who receive treatment from physicians who have been specifically trained in smoking cessation are much more likely to quit and remain

abstinent (Baliunas, Ivanova, Tanzini, Dragonetti, & Selby, 2020; Bauer et al., 2020). This finding points to the need for more HIV-specific smoking cessation training as a means of increasing the availability of such treatment for PLWHA who smoke.

Limitations

As with any research, this study was not without limitations. First, the design of the study was cross-sectional. Thus, it was not possible to establish a causational relationship. Additionally, for the sake of efficiency, the surveys were only distributed to one person at each program. This meant that constructs related to coworker attitudes and staff culture were completely dependent on the opinion of one individual. This made it difficult to definitively describe such culture and attitudes.

In regards to the research instruments, the items about Ryan White, could have delved deeper into the specific types of services or projects that were being funded. This would help create a better understanding of how these funds were used, and the relationship between the manner in which they were utilized and programs' ability to provide smoking cessation services for clients. Besides not addressing the specifics of Ryan White funding, the survey did not address capacity for tobacco services.

Future Implications

While there certainly were limitations, this research provides a strong foundation from which to build further investigation into smoking cessation services for PLWHA. A key outcome of this study was that outside funding, specifically from the Ryan White Care Act and Medicaid, was a critical predictor of whether programs offered smoking cessation services for their clients. Future research should focus on how the specific

ways in which Ryan White funding is granted may facilitate implementation of smoking cessation. Intervention-based research should focus on programs funded by Ryan White Part C, Part D, or Medicaid managed care that do not yet disseminate smoking cessation treatment. Policy-based research should focus on how to implement further funding into for-profit programs to aid them in making treatments more available.

Future research should also delve more into assessing capacity for tobacco cessation treatment. Hunt, Gajewski, Jiang, Cupertino, and Richter (2013) developed a 15-item scale which further explores organizations' characteristics and capabilities related specifically to treating tobacco dependence. Employing such instruments could provide deeper insight as to how program policies, staff culture, and resources influence availability of smoking cessation at HIV programs.

In the internal setting, manager and staff openness to EBTs, as well as manager and coworker attitudes toward smoking cessation, were significant predictors of behavioral methods for smoking cessation. In limited research, training people who work with PLWHA to use the screening, brief intervention and referral to treatment (SBIRT) model is effective in lowering tobacco use rates (Cropsey et al., 2013; Graham, Davis, Cook, & Weber, 2016). Though this research is scarce, the findings, combined with the data from this study show that further exploration of how to increase availability and effectiveness of smoking cessation for PLWHA via expansion and implementation of such training programs . These interventions should also focus on the relationship between training, openness, and treatment implementation.

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