



Nine years of smoking data from incarcerated men: A call to action for tobacco dependence interventions

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ABSTRACT

People who are incarcerated use tobacco in high numbers before incarceration and the vast majority resume tobacco use soon after release despite institutional smoking bans. Nine years of surveys collected at a correctional facility in the Midwest, U.S., were analyzed to identify the needs of this high-risk population and suggest future directions for research and intervention development. For the most part, survey respondents considered themselves no longer addicted to tobacco and intended to remain tobacco free after release. They increasingly expected support to remain tobacco free from their home environment despite no change in home tobacco use. Over this nine-year period, significantly fewer respondents wanted materials and help to remain tobacco free, suggesting they have become more challenging to assist. Implications for intervention development and future research are discussed.

1. Introduction

The prevalence of tobacco dependence among those incarcerated in prisons and jails in the U.S. remains exceptionally high, with estimates ranging from 50 % to 80 % prior to incarceration (Binswanger et al., 2014; Tobacco Control Legal Consortium, 2012). This represents a growing health disparity as it stands in stark contrast to the dropping prevalence of smoking in the general U.S. adult population (Centers for Disease Control and Prevention, 2020). While many people stop tobacco use during incarceration due to forced abstinence from tobacco bans, the majority resume tobacco use within a month of release from prison (60–90 %) (Frank et al., 2017; Puljevic et al., 2018). These individuals are disproportionately affected by numerous risk factors for tobacco use (e.g., housing instability, poverty, mental illness, substance use (Puljevic et al., 2019), and resumption of tobacco use upon release from prison is also likely to exacerbate many of these same negative health and psychosocial outcomes. Developing effective evidence-based relapse prevention programs is one essential component of achieving health equity for this especially vulnerable population.

While the high prevalence and relapse risk for tobacco use among incarcerated adults is well documented (Frank et al., 2017; Lincoln et al., 2009; Puljevic et al., 2018; Tobacco Control Legal Consortium, 2012),

we have limited evidence to inform relapse prevention programs in the pre-release or early post-release periods. Most prisons in the U.S. have implemented full or partial smoking bans over the past two decades, leading many people who previously used tobacco into forced abstinence during incarceration. This certainly represents a step toward improving at least short-term health outcomes while incarcerated but may yield limited long-term benefit to the vast majority who return to tobacco use nearly immediately upon release from prison. In fact, many return to tobacco use on the first day out of prison (Lincoln et al., 2009) with several estimates suggesting over 90 % will resume tobacco use within three weeks (Clarke et al., 2011). Lincoln et al. found that self-reported abstinence was only 37.3 % at the end of the first day after release, 17.7 % for the first week, 13.7 % for one month and 3.1 % for six months (Lincoln et al., 2009). Thus, forced abstinence alone is insufficient for long-term abstinence after prison release.

Multiple factors likely contribute to the high relapse rates following forced abstinence. Individuals leaving prison may face a tremendous number of known risk factors including stressors (e.g., parole, housing instability, unemployment, and limited finances), exposure to environmental tobacco use cues/triggers (e.g., smells/sights of smoking), alcohol and other substance use, and access to tobacco products. Another factor could relate to individuals' beliefs and perceptions

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related to whether they are still addicted to tobacco following abstinence during incarceration. While they will certainly be past the acute phase of nicotine withdrawal, including both the pharmacological and behavioral components of withdrawal (Baker et al., 2006), this may lead to the belief that they are no longer dependent on tobacco and an underestimate of the risk for relapse. Contemporary theories conceptualize addiction, including nicotine and tobacco, as a chronic and relapsing disorder (Koob & Volkow, 2016) with relapse precipitated by a variety of internal or external triggers. Implicit and explicit beliefs about tobacco use, self-efficacy about remaining abstinent, motivation to quit/remain quit, and planning to quit all correlate with successful quitting in the general public (Caponnetto & Polosa, 2008; Chassin et al., 2010; Engels et al., 1998; Herd et al., 2009). Less is known about the role of similar attitudes and beliefs in this population. It is vital to better understand the beliefs and desires surrounding tobacco use and treatment in this population in order to develop much needed interventions.

The current program evaluation survey was conducted to describe trends over the past decade in prevalence of tobacco use prior to incarceration, as well as perceptions, attitudes, and intentions about continued abstinence after release among adult men entering a minimum-security correctional supervised living facility over a nine-year period.

2. Method

Data collection took place for all admissions at a correctional facility in the Midwest, U.S., between 2012 and 2020. Men may be sent directly to this facility from the Department of Corrections (DOC) central processing, the DOC intake facility, or transferred from another facility. All men sent to this facility have a substance use disorder and are within 36 months of their release date. Typical length of stay is five to nine months. The last 20 weeks before release (26 weeks prior to 2014) consists of a program to prepare the men for their release. Intensity of the substance use disorder treatment reflects severity of substance use disorder and risk for re-offending. Ancillary interventions address things such as anger management and seeking employment. This facility has been tobacco-free since its opening. There is some contraband tobacco. There were 17 tobacco-related conduct reports from 7-1-19 to 7-1-20. For example, some individuals were found smoking cigarettes they found while on a community service project.

Men are admitted to the release preparation program in groups that have an average size of 10. Beginning in 2012, all men completed a brief, paper and pencil tobacco survey just before or as they started the program. Survey completion was tracked and any who did not complete the survey were contacted individually to take the survey. The survey was developed as a quality improvement and program evaluation of a tobacco group that was provided as an optional treatment opportunity. As such, it was exempt from review by the University of Wisconsin Institutional Review Board. Until 2014, the survey was administered by the facility's tobacco treatment staff. Since that time, the survey has been included in the initial paperwork given by other staff as part of initiating the release preparation program. Survey instructions were: "You are being asked to complete this survey as part of our evaluation of the nicotine dependence services that we provide to persons in our care. Your answers will help ensure we are meeting your needs and those of others who used tobacco products before incarceration. This survey is anonymous." Men completed the tobacco survey before they participated in the tobacco group.

The survey requires 5 to 10 min to complete and has been modified periodically over the nine years. The 2012 survey consisted of 18 questions and addressed topics such as: past tobacco use; tobacco users in the home; plans regarding tobacco use after release; support for not using tobacco post release; and desire for help regarding tobacco use. Four questions were added in 2015: time to first tobacco use; longest time not using tobacco; did you consider yourself addicted before incarceration; and do you consider yourself addicted now. Seven of the

original questions were eliminated in 2016 and one was added: tobacco use just before incarceration. Finally, response options to three items were changed in 2016: tobacco products used (e-cigarettes was added); would you like help not using tobacco; and plans for using or not post release. The final survey, unchanged since 2016, has 18 items (see Supplemental Information for the current survey items). The first survey question identified those that never used any tobacco. The survey was complete for never users after this first question and they did not answer any additional survey questions.

SPSS (IBM Corporation, 2013) was used to analyze survey responses. Responses were analyzed by year. Since the survey was administered as people started the release preparation program in groups, throughout the year, the year cohorts, while not overlapping, are continuous. For example, men starting the program in December 2019 would be in the 2019 cohort while men starting a month later, in January 2020, would be in the 2020 cohort. All responses were analyzed for the first survey question that established smoking status. All analyses for the remaining 17 questions only used responses from people who were tobacco users at some time in their life.

3. Results

A total of 5,289 incarcerated individuals completed the survey from 2012 to 2020 (yearly mean = 587.6; range = 487 to 670). Most respondents used tobacco products, most of these were daily users prior to incarceration, started at a young age, and were using tobacco products up until incarceration (see Table 1). For example, in 2020, 84.4 % of respondents (which excluded never tobacco users) were using tobacco products right up until incarceration or stopped shortly before because they knew they could not use tobacco while incarcerated. There was no change on pre-incarceration tobacco use across these nine years. Across that same period (2012 to 2019) overall adult smoking prevalence declined 22 %, from 18 % (US Department of Health and Human Services et al., 2012) to 14 % (Centers for Disease Control and Prevention, 2020).

Most respondents expect support from others in the home should they decide to remain tobacco free after release. This is despite about half returning to homes in which there are people who use tobacco products (and some respondents may have answered "no" to this question because they don't yet know where they will reside after release). For example, in 2020, 86.5 % of respondents reported that they will get support to remain tobacco free within the home, despite 51.5 % also reporting that they will be returning to a household in which some members use tobacco products (see Table 2). While there was no change in the percent returning to homes in which there is tobacco use over time, there was a significant increase in the percent who expected support to remain tobacco free from 80.6 % in 2012 to 86.5 % in 2020 (Linear trend, $\chi^2 = 18.08$, $df = 1$, $p < .01$) (IBM Corporation, 2013).

While most respondents considered themselves addicted to tobacco prior to incarceration, they no longer viewed themselves as addicted to tobacco at the time of the survey. For example, in 2020, 73.8 % believed that they were addicted to nicotine before incarceration while only 15.4 % believed so at the time of the survey (see Table 3). There was no change over time on these two variables.

Many survey respondents did not plan to resume tobacco use after release with the modal response, "definitely not" and think it will be "fairly easy" not to. For example, in 2020, 32.7 % of respondents selected "definitely not" when asked if they expected to resume tobacco use after discharge and the mean difficulty rating of doing so was 4.0 on a 0 to 10 scale from "very easy" to "very hard" (see Table 4). There were no changes over time on these variables.

Respondents were asked if they would be interested in receiving support material on being nicotine/tobacco free. The majority did not request such material, and most did not want help remaining tobacco free. For example, in 2020, 81.5 % of respondents did not want support materials, 25.9 % declined help because they planned to resume

Table 1
Tobacco Use by Survey Respondents.

Year	Total N	Ever use tobacco ^a (percent)	If used, were daily users ^{b,c} (percent)	Used until incarceration (percent) ^b	Mean age of first use (year)	Mean age if daily use (age)	Time before first AM cigarette (percent within 5 min) ^b
2012	487	90.8	95.2 (442)	Not asked	13.0	15.5	Not asked
2013	580	86.7	97.4 (501)	Not asked	13.4	15.8	Not asked
2014	581	84.7	94.6 (500)	Not asked	13.3	15.8	Not asked
2015	624	86.8	96.5 (591)	Not asked	13.2	15.8	36.3 (135)
2016	549	89.8	96.3 (490)	85.7 (476)	13.1	15.4	36.3 (479)
2017	597	88.6	95.5 (505)	85.2 (446)	13.1	15.6	33.8 (585)
2018	670	88.7	95.0 (594)	84.6 (590)	13.5	15.8	36.2 (581)
2019	589	88.6	95.4 (519)	83.0 (519)	13.5	15.7	36.8 (511)
2020	583	86.8	95.2 (506)	84.2 (505)	13.4	15.9	36.9 (501)

^a N - all survey respondents.

^b N of ever tobacco users (excludes never tobacco users).

^c Differences in Ns across a line reflect respondents who did not answer the question.

Table 2
Tobacco Use in the Home.

Year	Percent who expect support in the home to remain tobacco free (N) ^{a,b}	Percent who will return to a household which includes tobacco users (N) ^a
2012	80.6 (433)	48.5 (437)
2013	78.6 (490)	49.9 (493)
2014	81.4 (474)	49.9 (473)
2015	84.3 (498)	48.3 (509)
2016	88.6 (481)	45.8 (482)
2017	87.5 (512)	51.1 (511)
2018	85.9 (576)	46.9 (578)
2019	86.5 (512)	49.8 (512)
2020	86.5 (498)	51.5 (493)
Significance tests	$X^2 = 29.14$, $df = 8$, $p < .01$ linear trend: $X^2 = 18.08$, $df = 1$, $p < .01$	$X^2 = 5.98$, $df = 8$, $p = .649$

^a N of ever tobacco users (excludes never tobacco users).

^b Differences in Ns across a line reflect respondents who did not answer the question.

Table 3
Addiction before Incarceration and Currently.

Year	Percent believing they were addicted before incarceration (N) ^{a,b}	Percent believing they are addicted at time of survey (N) ^a
2015	68.9 (135) ^c	18.8 (133)
2016	74.6 (484)	21.0 (482)
2017	78.7 (516)	17.9 (514)
2018	76.7 (589)	19.9 (582)
2019	76.6 (513)	20.6 (510)
2020	73.8 (497)	15.4 (500)
Statistical test	$X^2 = 7.32$, $df = 5$, $p = .198$	$X^2 = 6.97$, $df = 5$, $p = .223$

^a N of ever tobacco users (excludes never tobacco users/smokers).

^b Differences in Ns across a line reflect respondents who did not answer the question.

^c This question was introduced during 2015 thus resulting in a lower N.

smoking after release and 61.9 % did not plan to resume smoking but did not want help to accomplish this (see Table 5). There was a significant decrease in the percent who wanted supportive materials over time from 33.3 % in 2012 to 18.5 % in 2020 (Linear trend, $X^2 = 77.44$, $df = 1$, $p < .01$) (IBM Corporation, 2013). While it is difficult to compare across years because the response categories changed, assuming all responses other than “Yes” were some form of “No”, there was significant decrease over time in the percent of respondents who wanted help from a high of 32.6 % in 2012 to a low of 8.3 % in 2020 (Linear trend $X^2 = 200.13$, $df = 1$, $p < .01$).

This survey permitted an examination of the relationship between historical tobacco use and perceived needs, beliefs, and intent to remain

smoke free after release. Specifically, desire for materials, desire for help, belief that they were addicted before incarceration, belief that they are currently addicted, intent to remain abstinent after release, expectation for home support, and how hard it will be to remain abstinent were studied as a function of: tobacco dependency (smoking within five minutes of awakening); age of tobacco use onset; age of regular tobacco use; and daily tobacco use. Those who use tobacco within five minutes of waking, compared to those that did not, were more likely to consider themselves currently addicted (23.2 % vs 16.6 %) ($X^2 = 17.34$, $df = 1$, $p < .01$); were more likely to want help (12.8 % vs 9.9 %) ($X^2 = 4.37$, $df = 1$, $p = .037$); were more likely to definitely or probably intend to use tobacco after release (26.7 % vs 14.9 %) ($X^2 = 70.08$, $df = 6$, $p < .01$); and expected that it would be harder to remain abstinent (4.59 vs 3.75, $t = 6.20$, $df = 2330$, $p < .01$) Likewise, those who smoked daily, compared to those who did not, were more likely to probably or definitely use tobacco after release (19.6 % vs 5.4 %) ($X^2 = 39.52$, $df = 6$, $p < .01$). Also, there was a significant negative correlation between age of regular use and perceived difficulty of remaining abstinent ($r = -0.128$, $p < .01$). Finally, there was a significant linear relationship between intent to remain abstinent after release and age of first tobacco use such that those who did not intend to remain abstinent started using tobacco at a younger age. ($F = 45.82$, $df = 1,2682$, $p < .01$).

4. Discussion

The notable findings from this descriptive, 9-year program evaluation survey of individuals are: 1) a very high prevalence of reported tobacco use prior to incarceration; 2) the absence of any decrease in tobacco use prior to incarceration over the nine years despite a substantial decrease in smoking prevalence among the general adult population during these same years; and 3) factors such as believing they are no longer addicted to nicotine; remaining abstinent will be relatively easy; and abstinence will be supported by those in the home despite their use of tobacco products may relate to the high rate of rapid relapse after release (Frank et al., 2017; Lincoln et al., 2009; Puljevic et al., 2018).

The stable high prevalence of tobacco use among people who are incarcerated stands in stark contrast to the steady decline in smoking prevalence over this same period in the general adult U.S. population. This underscores the urgency to establish effective tobacco dependence interventions for this population left behind both before and after incarceration. Likewise, incarcerated individuals’ beliefs about their addiction to tobacco and low risk for relapse are at odds with the extant literature that has consistently documented extremely high rates of tobacco use relapse post-incarceration. The findings about the perception of addiction and expectation that it will not be difficult to remain smoke free outside of prison and that those in their homes will be supportive, suggest a broader issue with addressing tobacco use in this population—namely, that their needs are insufficiently understood. Further, an increasing trend in expectation for home support and a decreasing desire

Table 4
Intent to Remain Tobacco Free after Release and Expected Difficulty.

Year	N ^c	% Yes	% No	Definitely	Probably	Maybe	Unsure	Maybe not	Probably Not	Definitely Not	Mean difficulty of remaining tobacco free (SD) ^b
2012	426	25.8	74.2	NA ^a	NA	NA	NA	NA	NA	NA	NA
2013	501	29.1	70.9	NA	NA	NA	NA	NA	NA	NA	NA
2014	477	26.6	73.4	NA	NA	NA	NA	NA	NA	NA	NA
2015	387	27.8	72.2	NA	NA	NA	NA	NA	NA	NA	NA
2015	125 ^d	NA	NA	13.6	9.6	5.6	11.2	8.8	15.2	36.0	5.0 (3.28)
2016	485	NA	NA	11.6	5.8	5.0	21.9	5.6	12.2	38.1	3.9 (3.27)
2017	516	NA	NA	11.6	6.8	6.4	18.2	4.6	13.3	39.0	4.1 (3.32)
2018	583	NA	NA	12.0	8.1	6.4	20.6	5.8	11.0	36.2	4.0 (3.47)
2019	510	NA	NA	12.5	7.2	8.2	19.6	5.9	12.0	34.5	3.8 (3.22)
2020	495	NA	NA	10.7	8.5	7.9	21.8	5.2	13.1	32.7	4.0 (3.12)
Statistical test		$\chi^2 = 2.34,$									
df = 3,											
p = .504		$\chi^2 = 22.14, df =$								F = 36.51	
		30, p = .849									
(5, 2411) p											
= .604											

^a Not Asked.

^b On a scale from 0 (very easy) to 10 (very hard).

^c N of ever tobacco users (excludes never tobacco users).

^d Response categories were changed during 2015 thus resulting in lower N.

Table 5
Desire for Help.

Year	Want Support Materials?		Want help to remain tobacco free?					Already got help at the facility
	N ^{c,d}	Percent Yes ^a	N ^c	% Yes ^b	% No	% No, plan to resume	% No, won't smoke but don't need help	
2012	439	33.3	435	32.6	67.4	Not asked	Not asked	Not asked
2013	493	30.6	498	27.9	72.1	Not asked	Not asked	Not asked
2014	476	20.2	478	20.7	79.3	Not asked	Not asked	Not asked
2015	510	19.2	522	16.5	84.0	Not asked	Not asked	Not asked
2016	475	19.2	418	15.3	NA	19.1	65.6	Not asked
2017	508	17.1	438	9.5	NA	20.8	69.9	Not asked
2018	580	19.8	488	8.6	NA	25.4	65.0	1.0
2019	509	16.1	400	8.8	NA	24.5	62.8	3.3
2020	439	18.5	409	8.3	NA	25.9	61.9	3.9

^a $\chi^2 = 82.11, df = 8, p < .01$; Linear trend $\chi^2 = 77.44, df = 1, p < .01$.

^b $\chi^2 = 206.08, df = 8, p < .01$; Linear trend $\chi^2 = 200.13, df = 1, p < .01$.

^c N of tobacco users (excludes never tobacco users/smokers).

^d Differences in Ns across a line reflect respondents who did not answer the question.

for help/materials implies that the challenge to help them may be increasing. The needs of this population and increasing challenge to reach and engage them in treatment suggests that standard evidence-based tobacco dependence interventions may be insufficient and perhaps inappropriate in the setting of incarceration and community reintegration.

Several of these key findings has implications for possible avenues for future investigation and design of intervention programs for incarcerated populations. The framing of tobacco addiction as both physiological and psychological may be helpful. The high proportion of people who expect their home environment to be supportive of not using tobacco combined with the low proportion who report being currently addicted to tobacco or needing any assistance in remaining abstinent after release, suggests that many respondents may not fully understand the role that their home environments and tobacco cues, which have not extinguished during incarceration, play in addictive behaviors. Though withdrawal from nicotine has been accomplished in large part due to the tobacco ban in prison, the psychological aspects of addiction are most certainly underestimated in and by this population.

The high rate of relapse to tobacco products post-release reported in the literature and the low perceived expectation of returning to tobacco use post-release, suggests a disconnect between intent and outcome that warrants further exploration for this population. The physiological aspects of addiction that are addressed via smoking bans in prisons are

important but may also cause prison systems to overlook the other powerful aspects of addiction that drive reengagement with tobacco (as well as alcohol and other drugs), by giving a false sense of having addressed the “problem” of tobacco use by inducing physical withdrawal after incarceration. In this context, reports that prisons may have reduced interest in tobacco interventions once a smoking ban is established are worrisome (Cork & Public Health Law Center, 2012).

Along these same lines, study results imply that it may help to reconceptualize “relapse” to cigarette smoking as “re-engagement” for this population. This more accurately characterizes the complexity of addictive behaviors in the context of release from a defined period of forced abstinence. Doing so acknowledges that the psychological draw to tobacco can be a driving component of use, along with any physiologic-based craving. That is, are “relapse prevention” interventions, as investigated in the literature (Jin et al., 2020), needed or are interventions to minimize the risk for “tobacco re-engagement” a more accurate description of the clinical challenge of reducing the exceptionally high-risk for resumed tobacco use?

Similar to other populations who are “forced” into abstinence from tobacco for defined periods of time, such as pregnant women, hospitalized patients, or new military recruits during boot camp, the “rebound effect” (UK Rehab, 2020) following release from external control and of re-establishing self-agency, may play a role in re-engagement with tobacco. Vandenberg identified smoking re-engagement as an expression

of independence and freedom following incarceration (van den Berg et al., 2014). Valera et al (2014) noted that smoking bans might have had the unanticipated consequence of increasing these motives to re-engage in smoking (Valera et al., 2014). To be successful, tobacco interventions might have to include components to ameliorate such motives.

Anticipating the difficulties of maintaining abstinence post-release may serve as a critical component in tobacco interventions for people who are incarcerated. In fact, preparing individuals for the triggers that arise post-release may be more important than addressing tobacco dependence during incarceration. A review of tobacco bans in prisons by Spaulding et al in 2018 (Spaulding et al., 2018), among others (Berg et al., 2018; Clarke et al., 2013; de Andrade & Kinner, 2016), conclude that bans may temporarily improve health and reduce in-prison healthcare costs, but have little to no effect after release (Spaulding et al., 2018). Pre-release tobacco interventions should address the unrealistic expectations about remaining tobacco free that perhaps gives rise to the decreasing desire for supportive materials and help. Toward this goal, perhaps hearing from peers who have been released and rapidly returned to smoking despite intentions otherwise would motivate some currently incarcerated to engage in treatment and accept help.

Study findings can contribute to current efforts to help this population. The WISE intervention (Working Inside for Smoking Elimination) used a combination of motivational interviewing and cognitive behavioral therapy to attempt to reduce relapse to smoking post-release from a tobacco-free prison (Clarke et al., 2013). The intervention began approximately 8 weeks prior to release, with 6 weekly sessions. Those in the WISE intervention were 4.4 times more likely to remain abstinent (25 % versus 7 %, verified by urine cotinine) at 3-week follow-up post-release than those randomized to the control condition (OR 4.4; 95 % CI, 2.0–9.7) (Clarke et al., 2013). Recognizing the significant emotional stressors that can accompany re-entry into society from prison, Richmond et al. conducted a randomized control trial of a behavioral intervention with or without nortriptyline for people who were incarcerated in New South Wales but found no difference in abstinence rates between the two groups at any time point post-release (Richmond et al., 2013). Interventions have also begun during incarceration but continued after release (Winkelman et al., 2021). Reviews of relevant literature have concluded that, beyond a small number of promising studies, this area has not received the attention it deserves and needs (Puljevic & Segan, 2019). This study adds to this literature by pointing out characteristics that can be used to tailor tobacco interventions for this population.

Study limitations include the self-report nature of the data, its descriptive nature, changes in the surveys over time, and a change in who administers the survey. There are significant differences between this correctional facility and most other correctional facilities. These include admitting only people with a substance use disorders who are within 36 months of their release date, providing substance use disorder treatment, and relatively short duration (5 – 9 months). As such, results may not generalize to all correctional facilities. In particular, past tobacco use prevalence may be higher for this facility than for other correctional settings because all those in residence had a substance use disorder and the prevalence of tobacco use is particularly high for such individuals (Guydish et al., 2011). Nonetheless, this study provides useful insights for future research and intervention development.

Though these data are only hypothesis-generating, the lack of any change in the prevalence of tobacco use among the residents of this facility over the course of nine years should sound an alarm. It sheds light upon an extremely vulnerable population that is being left behind in our efforts to reduce tobacco use. Considering that 12 % of all people who smoke in the United States leave prisons annually, this represents a tremendous opportunity to reach a significant portion of people who smoke (Lincoln et al., 2009).

The question remains, however, how to best consider the unique

challenges and circumstances of this population in the process of intervention design. Though we attempted to discuss some possible adjustments to current thinking in the tobacco dependence treatment community, more research and implementation science projects need to focus on this unique population.

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CRediT authorship contribution statement

Kari Ives: Conceptualization, Methodology, Writing – review & editing, Data curation. **Bruce Christiansen:** Conceptualization, Methodology, Writing – review & editing, Formal analysis, Writing – original draft, Project administration. **Margaret Nolan:** Conceptualization, Writing – review & editing, Writing – original draft. **Jesse T. Kaye:** Conceptualization, Writing – review & editing, Writing – original draft. **Michael C. Fiore:** Conceptualization, Writing – review & editing, Writing – original draft, Supervision, Resources.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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