

# Addressing Smoking During Medical Visits Patients with Human Immunodeficiency Virus

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**Background:** Tobacco use, especially cigarette smoking, is prevalent in patients with HIV and is associated with increased morbidity and mortality. The HIV patient–provider interaction about cigarette smoking is not well understood.

**Purpose:** Assess HIV provider attitudes and practices regarding smoking-related services and interventions for patients with HIV and explore patient–provider interactions regarding cigarette smoking from the perspective of people with HIV.

**Methods:** A one-time survey about provider attitudes and practices regarding smoking among patients with HIV was completed by 92 HIV providers in 2010–2011. Additionally, a semi-structured interview was conducted in 2010 with 32 patients with HIV who smoke about their attitudes toward smoking and patient–provider interactions. The data were analyzed in 2010–2011.

**Results:** Providers and patients reported frequent assessment of smoking during clinic appointments. The most common smoking-related services that providers reported included delivering brief advice to quit or reduce smoking, suggesting the use of nicotine replacement products, and providing smoking-cessation print materials to patients. Greatest barriers to providing smoking interventions in the context of HIV medical care appear to be lack of time, providers feeling insufficiently confident to address smoking, and the perception by patients that providers who did not push them to quit are more understanding. Approximately half of physicians expressed interest in seeking additional education to address cigarette smoking among their patients.

**Conclusions:** Numerous smoking-related services occur in the context of HIV medical encounters. However, patient–provider relationship factors and time restrictions represent major barriers to effective intervention for this complex health problem.

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## Background

Tobacco use, especially cigarette smoking, is prevalent in men, women,<sup>1</sup> and adolescents<sup>2</sup> with HIV and is associated with increased morbidity and mortality.<sup>3,4</sup> Studies<sup>5,6</sup> conducted with patients with HIV in medical care demonstrated rates of cigarette smoking nearly three times higher than those found in the general population (approximately 20%<sup>7</sup>). Tobacco use—

primarily cigarette smoking—among patients with HIV has been associated with a variety of health problems, including lower CD4 count,<sup>8</sup> hyperlipidemia,<sup>9</sup> and oral erythematous candidiasis.<sup>10,11</sup> Studies<sup>6,12</sup> demonstrate that most (58%–75%) HIV-infected smokers are interested in quitting smoking. For these reasons, addressing cigarette smoking among patients with HIV is a high priority.

The delivery of smoking-related services during HIV medical encounters through effective communication and provision of cessation services may be an effective means to promote smoking cessation. The importance of patient–provider communication in achieving optimal patient outcomes has been long recognized<sup>13,14</sup>; however, major barriers to such communication in HIV medical encounters persist.<sup>15</sup> Moreover, barriers to patient–provider communication in HIV care appear to be more pronounced for minority patients.<sup>16,17</sup> Few studies have examined smoking services in the context of medical

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encounters. In one of the few that have, fewer than half of service providers in New York State assessed tobacco use, smoking history, and interest in quitting at intake.<sup>6</sup> In a recent study<sup>18</sup> of physician practices related to tobacco use, many physicians somewhat or strongly agreed that they frequently prescribe nicotine replacement products (46%) and varenicline (42%) to their HIV-positive patients, and advise patients to call a quitline (43%). Thirty percent of physicians in this study stated that they were interested in attending a brief smoking-cessation training session. A separate study<sup>19</sup> showed that physicians who provided care to patients with HIV were less aware of smoking among their patients than physicians who provided care to other patient populations.

The purpose of the current study was twofold: (1) to assess HIV provider attitudes and practices regarding smoking-related services for their patients with HIV and (2) to examine smoking-related services that patients with HIV recall receiving from their providers and to explore potential patient-provider barriers to smoking-related service delivery. Study procedures were approved by the University of Minnesota IRB.

## Methods

### Provider Survey

**Participants and procedures.** A quantitative survey of provider attitudes and practices regarding cigarette smoking among their patients with HIV was conducted from January 2010 to May 2011 to gain the most information possible and reduce time burden on providers. Providers were eligible for the study if they managed the care of at least one patient with HIV in the past 12 months. Providers were recruited in one of four ways:

1. Information about the study was disseminated to members of the Minnesota provider list serve for the Midwest AIDS Education and Training Center ([www.matec.info/](http://www.matec.info/);  $n=37$  providers);
2. Members of the Minnesota Medical Association (MMA) specializing in infectious disease were mailed a paper-and-pencil survey requesting their participation in the study ( $n=19$  providers);
3. An announcement about the study was placed in the online e-newsletter received by members of the American Academy of HIV Medicine ([aahivm.org/Default.aspx](http://aahivm.org/Default.aspx);  $n=33$  providers); and
4. Word of mouth ( $n=3$ ).

Providers completed the survey either online or as a paper-and-pencil survey. For the online survey, providers electronically signed the informed consent form. Next, they indicated whether they had provided care for one or more patients with HIV in the past 12 months. Those who had were guided through the items described below. For the paper-and-pencil survey, providers signed one of the two enclosed consent forms and returned it with the completed survey. The paper-and-pencil survey contained written instructions for item skip patterns that paralleled the online survey. Providers did not receive remuneration for their participation.

**Measures.** The survey instrument included 40 items that were developed for the purposes of the present study and informed by a community advisory board consisting of HIV providers and pa-

**Table 1.** Demographic characteristics of HIV providers, % ( $n$ ) unless otherwise noted

	Total ( $n=92$ )	Physician only ( $n=55$ )
Age (years; M [SD])	46.9 (10.8)	47.1 (10.0)
<b>Gender</b>		
Male	55.4 (51)	67.3 (37)
Female	44.6 (41)	32.7 (18)
<b>Hispanic</b>		
Yes	4.4 (4)	3.6 (2)
<b>Race</b>		
White	80.2 (69)	76.9 (40)
African-American	9.3 (8)	7.7 (4)
Asian	10.5 (9)	15.4 (8)
<b>State</b>		
Minnesota	63.0 (58)	63.6 (35)
Outside Minnesota <sup>a</sup>	37.0 (34)	36.4 (20)
<b>Primary provider role</b>		
Physician	59.8 (55)	100 (55)
Nurse practitioner	13.0 (12)	—
Registered nurse	12.0 (11)	—
Pharmacist	5.4 (5)	—
Physician's assistant	3.3 (3)	—
Case manager	2.2 (2)	—
Social worker	2.2 (2)	—
Dentist	1.1 (1)	—
Psychologist	1.1 (1)	—
Smoked 100 cigarettes in lifetime	27.2 (25)	16.4 (9)
Years seeing HIV-positive patients, M (SD)	13.5 (8.5)	15.0 (8.2)
Number of HIV-positive patients in past 12 months, M (SD)	202.0 (296.8)	146.2 (170.1)
Estimated % HIV-positive patients who smoked in past 12 months, M (SD)	45.1 (21.6)	41.5 (21.8)

*Note:* Frequencies may not add to total N because of missing data.  
<sup>a</sup>Providers were from the following states (frequency): Arizona (3); California (4); Colorado (2); Connecticut (1); Washington DC (1); Florida (3); Georgia (1); Illinois (4); Massachusetts (1); Missouri (2); New York (3); Pennsylvania (1); Texas (1); Virginia (2); and Wisconsin (5).

tients with HIV who smoke cigarettes. Providers completed demographic questions (Table 1) and indicated how many years they had provided care for patients with HIV and their primary professional role. Assessment practices were measured by asking participants to

**Table 2.** Smoking services provided to patients with HIV, *n* (%)

	All providers ( <i>n</i> =92)		Physician only ( <i>n</i> =55)	
	Never/some	Most/all	Never/some	Most/all
Provided brief advice (<5 minutes) to reduce smoking	38 (43.2)	50 (56.8)	25 (49.0)	26 (51.0)
Provided brief advice (<5 minutes) to quit smoking	16 (17.6)	75 (82.4)	6 (11.1)	48 (88.9)
Provided in-depth counseling (>5 minutes) to reduce/quit smoking	70 (77.8)	20 (22.2)	46 (83.6)	9 (16.4)
Suggested nicotine replacement products	51 (58.0)	37 (42.0)	29 (54.7)	24 (45.3)
Prescribed medications to help patients reduce/quit smoking	62 (73.8)	22 (26.2)	42 (76.4)	13 (23.6)
Referred to services outside the clinic	71 (78.9)	19 (21.1)	46 (83.6)	9 (16.4)
Referred to services inside the clinic	62 (83.8)	12 (16.2)	44 (89.8)	5 (10.2)
Referred to social work or mental health professional	76 (90.5)	8 (9.5)	48 (90.6)	5 (9.4)
Performed tests or procedures I would not typically conduct	76 (90.5)	8 (9.5)	48 (88.9)	6 (11.1)
Provided smoking-cessation reading materials	56 (61.5)	35 (38.5)	38 (69.1)	17 (30.9)
Referred to QUITLINE	62 (68.9)	28 (31.1)	41 (74.5)	14 (25.5)

Note: Frequencies may not add up to the total *n* because of missing data or “not applicable” responses.

indicate who at their clinic assesses smoking and how frequently smoking is assessed among their patients with HIV. Frequency of smoking-related services (response options: *Never*, *Some smokers*, *Most smokers*, and *All smokers*) was assessed with items shown in Table 2. Providers also were asked the degree to which they agreed or disagreed with the statements in Table 3 using a 5-point Likert-type scale to examine provider attitudes regarding smoking among their patients with HIV.

## Patient Interviews

**Participants and procedures.** Semi-structured interviews were conducted with patients with HIV who smoke cigarettes to supplement information from the provider survey and because relatively little is known about patients' own experiences of interactions with providers about smoking. Study participants were recruited during a 4-month period (June–September) in 2010. A targeted recruitment plan was used to approximate the epidemiology of HIV in Minnesota with respect to gender, race/ethnicity, and sexual orientation. Participants were recruited passively through print materials placed in local AIDS service organizations and pharmacies that served HIV-positive clientele (as reported by the lead pharmacist). Those interested in the study called the study phone number to screen for eligibility, which included being aged  $\geq 18$  years, diagnosed with HIV, and smoking at least one cigarette in the past 6 months (to attempt to capture a range of participants from light to heavy smokers). An in-person interview was conducted in a private room located in a local community pharmacy, after which participants received \$50.

**Interview format.** Participants completed a semi-structured interview (available as Appendix A online at [www.ajpmonline.org](http://www.ajpmonline.org)) that included the following topics: drawbacks and benefits of smoking, changes in smoking following their HIV diagnosis and other changes in their health status, descriptions of the conversations that they had with their healthcare provider regarding cigarette smoking, and services offered by their healthcare provider to assist with smoking reduc-

tion or cessation. Afterward, participants completed a paper-and-pencil questionnaire to obtain additional information about their health status, cigarette use, and demographic characteristics. The questionnaire was developed for the purpose of this study and included some items from a frequently used measure to assess cigarette smoking.<sup>20</sup> On average, the semi-structured interview took 35 minutes to complete (not including reviewing the consent forms and the post-interview questionnaire).

## Analyses

Analysis of the provider surveys occurred between July and August 2011. Means, frequencies, and percentages were used to summarize demographic, attitudinal, and behavioral items. Smoking-related healthcare provider practices were collapsed into either “never smokers/for some smokers” or “for most smokers/for all smokers” to avoid small cell sizes. Nonparametric tests were used to compare differences in smoking-related practices or attitudes between physicians and nonphysicians.

Interviews were transcribed verbatim from the digital audio-recording and entered into NVivo, version 8 (QSR International, 2009). Participant transcripts were identified by a unique identification number to protect their identity. Transcripts were analyzed systematically from December 2010 through May 2011 using open and axial coding<sup>21</sup> to uncover patterns and trends in responses. Text-based data were coded using an iterative process of manually reading text for themes and repeating the process to further refine and validate the coding. Specifically, transcripts were read line-by-line to identify grammatical segments (the units of analysis for text coding) referencing one or more of the research questions. Next, grammatical segments were topic-coded, a process referred to as “open coding.” Open codes were collapsed into concepts and macro-level themes; as new concepts and themes arose, definitions for each were agreed upon. Finally, a peer debriefing<sup>22</sup> was held to discuss and refine themes that arose from the interview data.

**Table 3.** Provider attitudes about cigarette smoking among their patients with HIV

	Total sample (n=92)		Physician only (n=55)	
	M (SD)	% strongly agree/agree	M (SD)	% strongly agree/agree
<b>Prioritizing addressing cigarette smoking among patients</b>				
Cigarette smoking is a problem among my patients with HIV.	4.5 (0.7)	92.4	4.4 (0.8)	89.1
Addressing cigarette smoking among my patients with HIV is a high priority.	4.2 (0.9)	79.4	4.1 (1.0)	78.2
Addressing cigarette smoking among my patients with HIV is less of a priority than addressing other health issues and problems.	2.4 (1.1)	16.5	2.5 (1.1)	18.2
<b>Confidence and provider practices regarding cigarette smoking</b>				
I take into consideration what is happening in my patient's lives before offering smoking-cessation advice or resources.	3.7 (1.0)	73.6	3.7 (1.0)	74.1
I would seek additional education about ways to help my patients with HIV reduce or quit smoking cigarettes.	3.5 (0.9)	61.5	3.3 (0.9)	51.9
I am confident in my ability to provide smoking-cessation services and resources to my patients with HIV.	3.4 (0.8)	55.0	3.4 (0.8)	48.2
I have adequate time to address cigarette smoking during appointments with my patients with HIV.	3.0 (1.1)	38.0	3.0 (1.1)	34.5
I don't believe the smoking-cessation advice or resources I offer my patients actually help them quit or reduce their smoking.	2.3 (0.9)	8.9	2.3 (0.9)	11.1
<b>Provider beliefs of patient attitudes about cigarette smoking</b>				
Most of my patients with HIV know smoking is a problem but do not want to quit.	3.6 (0.9)	59.8	3.5 (0.9)	56.4
Most of my patients with HIV who smoke cigarettes do not think that their smoking will affect their HIV.	3.4 (1.0)	56.0	3.3 (1.0)	53.7
Most of my patients with HIV lack the confidence that they can quit smoking.	3.3 (0.8)	43.5	3.3 (0.8)	38.2

Note: 1=strongly disagree; 5=strongly agree

## Results

### Provider Survey

**Demographic characteristics.** On average, providers were aged 47 years (range=25–71), mostly male (55%) and white (80%; Table 1). Almost two thirds (63%) resided in Minnesota and identified their primary role as either a physician (60%) or nurse/nurse practitioner (25%). Twenty-seven percent ( $n=25$ ) of providers reported smoking at least 100 cigarettes in their lifetime. Providers reported serving patients with HIV an average of 13.5 years, and providing care for an average of 200 patients with HIV in the past 12 months (range 2–1500; median=100). Providers estimated that approximately one half (45%) of their patients with HIV smoked cigarettes in the past 12 months.

The physician-only sample largely resembled the overall sample, although physicians reported seeing fewer patients with HIV per year (M=146; range 5–950; median=100), a larger percentage of the physicians identi-

fied as male (67%), and fewer of the physicians reported smoking at least 100 cigarettes in their lifetime (16%).

**Provider smoking-related assessment and practices.** Providers reported that cigarette smoking was most often assessed by the physician (78%), followed by a registered nurse (45%) and/or a nurse practitioner (34%). Patients' smoking behaviors were less commonly assessed by a medical assistant (23%); social worker (17%); pharmacist (15%); or case manager (13%).

Among the providers and among the physicians only, the most common smoking-related services were brief advice to quit or reduce smoking, suggesting the use of nicotine replacement products, and providing smoking-cessation print materials to patients (Table 2). Thirty-one percent of the total sample and one quarter of physicians referred patients to tobacco quitlines. More physicians offered brief advice to quit smoking to most or all of their patients than nonphysicians (89% vs 73%,  $\chi^2$  [1, N=91]=3.84,  $p=0.05$ ). However, when in-house ser-

**Table 4.** Demographic characteristics of tobacco-using people with HIV (n=32), % (n) unless otherwise noted

Age in years, M (SD; range)	43.5 (9.4; 26–64)
Years with HIV, M (SD; range)	10.9 (6.6; 0.5–25.0)
Days smoked cigarettes past month, M (SD; range) <sup>a</sup>	29.1 (4.8; 7–30)
<b>Gender</b>	
Male	75.0 (24)
Female	25.0 (8)
<b>Race</b>	
African-American	46.9 (15)
White	46.9 (15)
Bi-racial	6.3 (2)
<b>Hispanic</b>	
Yes	9.4 (3)
<b>Sexual orientation</b>	
Heterosexual	56.3 (18)
Homosexual	43.7 (14)
<b>Education</b>	
Less than high school	9.4 (3)
High school diploma	50.0 (16)
Some college/technical degree	37.5 (12)
College degree	3.1 (1)
<b>Residency</b>	
Medium city	25.0 (8)
Large city	40.6 (13)
Downtown area	34.4 (11)
<b>Employment status</b>	
Part-time work	6.7 (2)
Full-time work	13.3 (4)
Student	6.7 (2)
Disabled	43.3 (13)
Unemployed	26.7 (8)
Retired	3.3 (1)
<b>Taking HIV medications</b>	
Yes	90.6 (29)
<b>How often do you smoke cigarettes (past 6 months)</b>	
Every day	87.5 (28)
Most days	9.4 (3)
Some days	3.1 (1)

(continued)

**Table 4.** (continued)

<b>How soon after you wake up do you smoke your first cigarette?</b>	
Within 5 minutes	53.1 (17)
Between 6–30 minutes	40.6 (13)
After 60 minutes	6.3 (2)
<b>Attempted to quit smoking<sup>b</sup></b>	
Past year	35 (11)

<sup>a</sup>Three missing cases

<sup>b</sup>One missing case

vices were available, fewer physicians referred most or all of their patients to such services than nonphysicians (10% vs 28%,  $\chi^2 [1, N=74]=3.86, p=0.05$ ). No other significant differences in smoking-related services were found between physicians and nonphysicians.

**Provider smoking-related attitudes.** Provider attitudes items fell into three overarching categories: their overall attitudes about smoking among their patients with HIV, their beliefs about their ability to address smoking among their patients, and their beliefs about their patients who smoke (Table 3). Overall, most providers (as well as physicians only) agreed or strongly agreed that cigarette smoking was a problem among their patients with HIV, and that addressing smoking was a high priority even in the context of other health issues. For example, nearly 80% of the overall sample agreed or strongly agreed that addressing cigarette smoking among their patients with HIV is a high priority, which was similar for physicians only.

However, providers appeared to be less unanimous in their beliefs about their ability to address cigarette smoking with their patients. Approximately half of providers and the physicians-only group agreed or strongly agreed that they felt confident to provide smoking-cessation services to their patients, and just over one third agreed or strongly agreed that they had adequate time to address cigarette smoking during appointments. A higher percentage of nonphysicians agreed or strongly agreed that they would seek additional education about ways to help their patients with HIV reduce or quit smoking cigarettes than physicians (76% vs 52%),  $\chi^2(1, N=91)=5.27, p=0.02$ .

Many providers and physicians in the physician-only group agreed or strongly agreed that patients know that smoking is a problem but do not want to quit (59.8% and 56.4%, respectively) or that patients fail to understand the effect of smoking on their HIV (56% and 53.7%, respectively). However, fewer providers and physicians believed that patients lack the confidence to quit smoking (43.5% and 38.2%, respectively).

**Table 5.** Patient–provider interaction barriers to addressing cigarette smoking

Barrier	Examples of theme
<b>HIV provider addresses only HIV</b>	It's not like that's what I'm here in the office about is the smoking. I'm there for HIV. I don't think she can really help me quit smoking. She's there to make sure my health is okay concerning my HIV, not my smoking. I really don't think that's their specialty. (aged 40–50 years, African American, female, heterosexual)
	I think he cares about me quitting, but he's more wrapped up in the advancement of HIV than the advances of smoking cigarettes. HIV is more challenging than smoking. (aged 50–60 years, multiracial, male, gay)
<b>Inadequate time to address cigarette smoking in appointment</b>	They want to know how much you smoke and the next statement is you shouldn't, it's not good for you. And that's pretty much it. You're onto other things. They don't have a lot of time to spend with you in the first place. (aged 50–60 years, white, male, gay)
	I think he is so busy with HIV and so great at the research that he really doesn't have time to help me quit smoking. (aged 40–50 years, white, male, gay)
<b>Low confidence in provider's influence over cigarette smoking</b>	I have zero, hardly any, confidence in my doctor to help me quit smoking. If I wanted to quit smoking, I would get Chantix, go on the patch, go to support groups, and I would quit. He wouldn't tell me anything different. So what he said wouldn't make any difference. (aged 40–50 years, white, male, gay)
	I do not have very much confidence in him because he doesn't have the time. He's restricted by time. (aged 60–70 years, white, male, gay)
<b>Providers do not push patient to quit smoking</b>	She just said try your best with quitting. She don't never get on me and say really really really quit. She's very professional. (aged 50–60 years, white, female, straight)
	My doctor has always encouraged me to stop smoking, but he also has told me that it wouldn't be a good idea with my other addiction issues. There's always the possibility of somebody going off the deep end if you quit everything at once. (aged 20–30 years, white, male, bisexual)

## Patient Interviews

**Patient participant demographic characteristics.** Patients with HIV who participated in the semi-structured interviews were on average aged 43 years (range=26–64 years) and had been living with HIV for 11 years (range=0.5–25 years). Most participants were male (75%); racially diverse (53% nonwhite); heterosexual (56%); and had at least a high school diploma (90%; Table 4). Most of the patients with HIV in this sample reported smoking cigarettes daily (94%).

Thirty-eight percent of participants reported that their physician had assessed their cigarette smoking at some point during their HIV care, 16% stated that a nurse completed a smoking assessment, and the remainder reported that both their physician and a nurse assessed their smoking. Nearly all participants in this sample ( $n=30/32$ ) recalled that their provider used at least one strategy to address cigarette smoking during the time they had been receiving care from that provider. Most common strategies included providing information about the negative effects of smoking ( $n=19$ ); advising the patient to quit smoking ( $n=13$ ); suggesting the use of nicotine replacement products ( $n=13$ ); providing specific information

about the impact of smoking on HIV disease ( $n=13$ ); and offering a referral to a smoking-cessation program ( $n=7$ ). Less commonly reported strategies were providing advice to reduce smoking ( $n=6$ ); offering a prescription for medication to reduce urges to smoke ( $n=6$ ); referring patients to a quitline ( $n=4$ ); and offering printed materials on the hazards of smoking ( $n=3$ ).

**Patients' perceptions of patient–provider interactions around smoking.** Overall, patients reported positive attitudes toward their providers and commented on the high quality of HIV care they received. However, a number of patient-specific and patient–provider interaction barriers emerged from the interviews that appeared to reduce the potential impact of smoking-related discussions and services offered in this context (Table 5). Participants believed that providers did not have the time, nor was it their role, to address cigarette smoking in the context of HIV care. Even when time was taken to address smoking, many participants believed that providers had little influence over their smoking habits. Instead, these participants held strong beliefs that her or his personal commitment to quitting was the only factor that could

influence their success to quit. An unexpected finding was that some participants interpreted their provider's reluctance to push them to stop smoking as a reflection that their provider understood them and as a sign of their provider's professionalism.

## Discussion

Several important lessons emerged from the results of this study. First, addressing cigarette smoking in the context of HIV medical care is a priority for providers, and cigarette smoking appears to be addressed at least minimally in the context of HIV medical care for most patients. Brief advice to patients to quit or reduce their cigarette smoking was the most commonly reported service, particularly among physicians. A prior study showed that adults attending an outpatient clinic who were asked about their tobacco use or counseled to quit smoking had very high levels of satisfaction with their physician,<sup>23</sup> and physician advice may prime some adults to modify unhealthy habits such as smoking.<sup>24</sup> Although a priority, many providers (60%) in the current study believed that their patients are not motivated to quit. This contrasts with findings that 62%–68% of HIV-positive smokers report either contemplating quitting or preparing to quit.<sup>12,25</sup> Providers who hold this belief may be disinclined to explore fully quitting options with patients. Informing providers that most of HIV-positive patients who smoke express a desire to quit smoking<sup>6</sup> may facilitate opportunities to increase patient–provider dialogue about smoking.

Second, a number of potential barriers may impede the successful provision of smoking services in HIV medical care. Structurally, lack of time to address smoking during medical appointments was a concern among two thirds of providers in this survey (compared to 35% of physicians in a prior study<sup>18</sup>). Ways to improve efficiency in HIV medical encounters or strategies to shift responsibility of engaging patients about their smoking behaviors to other healthcare providers (i.e., task shifting) may be investigated as possible solutions. Another barrier identified by providers and patients was the lack of confidence in the providers' ability to deliver effective smoking reduction or cessation services. Although providers may recognize a problem during a medical encounter, they may fail to intervene on it for a variety of reasons (known as "clinical inertia"<sup>26</sup>), including low confidence. Thus, it may be important to train providers who lack confidence to identify opportunities to initiate discussions about smoking, and initiate interventions in those instances. These results suggest that it may be more successful if providers directly state their desire for the patient to quit out of concern for their patients' health, as some patients may

otherwise misinterpret provider's silence or "soft" approach to smoking cessation as reflecting understanding. In this way, providers can provide clear recommendation to patients who smoke and open a conversation for strategies to reduce or quit smoking yet retain patient trust, which is critical to effective HIV care.<sup>27,28</sup>

Finally, three quarters of nonphysicians in the present study would seek additional smoking-related educational opportunities. However, less than one third of HIV physicians in this sample were willing to do so, which was low compared to a prior study (52%).<sup>18</sup> As management of HIV disease has shifted to a chronic care model,<sup>29</sup> creating opportunities for HIV providers to address a broad range of health behaviors are needed. Interventions to reduce tobacco use among patients with HIV outside the clinic setting have been tested,<sup>30,31</sup> although none include provider-delivered interventions.

The results of the current study are limited by its non-random sampling strategy, small sample size, and by primarily recruiting providers from one state (Minnesota). There were differences in provider attitudes and willingness to seek further education between this and a prior study,<sup>18</sup> which is likely the result of different sampling strategies and recruitment sources. Therefore, results are not generalizable to all providers of patients with HIV nor reflect all the attitudes and experiences of cigarette-smoking patients with HIV. Future studies would benefit by collecting a larger sample of providers and patients, and by assessing experiences, attitudes, and practices by demographic characteristic (e.g., gender and race/ethnicity). Rather, the present study is meant to spur additional research into how smoking-related interventions may be incorporated effectively into the HIV medical encounter. In addition, patient–provider dyads were not assessed, which would have provided a more direct assessment of similarities and differences between patients' and providers' perceptions of their interactions regarding tobacco use.

Despite these limitations, the current study is unique in that it assessed both provider and patient perspectives on HIV medical encounters regarding cigarette smoking. Success rates for smoking cessation vary across modalities and therapies<sup>32</sup>; however, there is evidence that traditional smoking-cessation interventions are less effective for patients with HIV.<sup>33</sup> Future research is needed to establish best practices for integrating smoking-cessation services in the context of chronic medical care<sup>34</sup> that may offer a potentially effective solution to this complex health problem.

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## References

- Steinberg MB, DeSimone JA, Abatemarco D. Tobacco use in HIV-infected women. *Ann Intern Med* 2002;136(11):W1.
- Panday S, Reddy SP, Ruiter RA, Bergstrom E, de Vries H. Determinants of smoking among adolescents in the Southern Cape-Karoo region, South Africa. *Health Promot Int* 2007;22(3):207–17.
- Cohen MH, French AL, Benning L, et al. Causes of death among women with human immunodeficiency virus infection in the era of combination antiretroviral therapy. *Am J Med* 2002;113(2):91–8.
- Palella FJJ, Baker RK, Buchacz K, et al. Increased mortality among publicly insured participants in the HIV Outpatient Study despite HAART treatment. *AIDS* 2011;25(15):1865–76.
- Mamary EM, Bahrs D, Martinez S. Cigarette smoking and the desire to quit among individuals living with HIV. *AIDS Patient Care STDS* 2002;16(1):39–42.
- Tesoriero J, Gieryc S, Carrascal A, Lavigne H. Smoking among HIV positive New Yorkers: prevalence, frequency, and opportunities for cessation. *AIDS Behav* 2012;14(4):824–35.
- Davis S, Malarcher A, Thorne S, Maurice E, Troclair A, Mowery P. State-specific prevalence and trends in adult cigarette smoking—U.S., 1998–2007. *MMWR Morb Mortal Wkly Rep* 2009;58(9):221–6.
- Wojna V, Robles L, Skolasky RL, et al. Associations of cigarette smoking with viral immune and cognitive function in human immunodeficiency virus-seropositive women. *J Neurovirol* 2007;13(6):561–8.
- Neumann T, Woiwod T, Neumann A, et al. Cardiovascular risk factors and probability for cardiovascular events in HIV-infected patients. Part II: gender differences. *Eur J Med Res* 2004;9(2):55–60.
- Soysa NS, Ellepola AN. The impact of cigarette/tobacco smoking on oral candidosis: an overview. *Oral Dis* 2005;11(5):268–73.
- Robinson PG, Challacombe SJ, Sheiham A, Zakrzewska JM. Is erythematous candidiasis associated with advanced HIV disease? *Oral Dis* 1997;3(S1):S116–S118.
- Burkhalter JE, Springer CM, Chhabra R, et al. Tobacco use and readiness to quit smoking in low-income HIV-infected persons. *Nicotine Tob Res* 2005;7(4):511–22.
- Simpson M, Buckman R, Stewart M, et al. Doctor–patient communication: the Toronto consensus statement. *BMJ* 1991;303(6814):1385–7.
- Clark NM, Nothwehr F, Gong M, et al. Physician–patient partnership in managing chronic illness. *Acad Med* 1995;70(11):957–9.
- Nachega JB, Morroni C, Zuniga JM, et al. HIV treatment adherence, patient health literacy, and health care provider–patient communication: results from the 2010 AIDS Treatment for Life International Survey. *J Int Assoc Physicians AIDS Care* 2012;11(2):128–33.
- Beach MC, Saha S, Korthis PT, et al. Patient–provider communication differs for black compared to white HIV-infected patients. *AIDS Behav* 2011;15(4):805–11.
- Beach MC, Shaha S, Korthis PT, et al. Differences in patient–provider communication for Hispanic compared to non-Hispanic white patients in HIV care. *J Gen Intern Med* 2010;25(7):682–7.
- Shuter J, Salmo L, Shuter A, Nivasch E, Fazzari M, Moadel A. Provider beliefs and practices relating to tobacco use in patients living with HIV/AIDS: a national survey. *AIDS Behav* 2012;16(2):288–94.
- Crothers K, Goulet JL, Rodriguez-Barradas MC, et al. Decreased awareness of current smoking among health care providers of HIV-positive compared to HIV-negative veterans. *J Gen Intern Med* 2007;22(6):749–54.
- Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom Test for nicotine dependence: a revision of the Fagerstrom Tolerance Questionnaire. *Br J Addict* 1991;86(9):1119–27.
- Glaser B, Strauss A. *The discovery of grounded theory: strategies for qualitative research*. New York: Aldine de Gruyter, 1967.
- Creswell J. *Research design: qualitative and quantitative approaches* 1994. Thousand Oaks CA: Sage.
- Barzilai DA, Goodwin MA, Zyzanski SJ, Stange KC. Does health habit counseling affect patient satisfaction? *Prev Med* 2001;33(6):595–9.
- Kreuter MW, Chheda SG, Bull FC. How does physician advice influence patient behavior? evidence for a priming effect. *Arch Fam Med* 2000;9(5):426–33.
- Gritz ER, Vidrine DJ, Lazev AB, Amick BC 3rd, Arduino RC. Smoking behavior in a low-income multiethnic HIV/AIDS population. *Nicotine Tob Res* 2004;6(1):71–7.
- Phillips LS, Branch WT, Cook CB, et al. Clinical inertia. *Ann Intern Med* 2001;135(9):825–34.
- Saha S, Jacobs EA, Moore RD, Beach MC. Trust in physicians and racial disparities in HIV care. *AIDS Patient Care STDS* 2010;24(7):415–20.
- Preau M, Lepout C, Villes V, et al. Prevalence and predictors of deterioration of a trustful patient–provider relationship among HIV-infected persons treated with antiretroviral therapy. *J Acquir Immune Defic Syndr* 2008;47(4):467–71.
- Beaudin CL, Chhabra SM. HIV/AIDS as a chronic disease. *Am Behav Sci* 1996;39(6):684–706.
- Vidrine DJ, Arduino RC, Gritz ER, Vidrine DJ, Arduino RC, Gritz ER. Impact of a cell phone intervention on mediating mechanisms of smoking cessation in individuals living with HIV/AIDS. *Nicotine Tob Res* 2006;8(S1):S103–S108.
- Vidrine DJ, Arduino RC, Lazev AB, et al. A randomized trial of a proactive cellular telephone intervention for smokers living with HIV/AIDS. *AIDS* 2006;20(2):253–60.
- Wu P, Wilson K, Dimoulas P, Mills E. Effectiveness of smoking cessation therapies: a systematic review and meta-analysis. *BMC Public Health* 2006;6(1):300.
- Benard A, Bonnet F, Tessier J-F, et al. Tobacco addiction and HIV infection: toward the implementation of cessation programs. ANRS CO3 Aquitaine Cohort. *AIDS Patient Care STDS* 2007;21(7):458–68.
- Gritz ER, Vidrine DJ, Fingeret MC. Smoking cessation a critical component of medical management in chronic disease populations. *Am J Prev Med* 2007;33(6S):S414–S422.

## Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.amepre.2012.07.032>.