

## BRIEF REPORTS

# Physician Beliefs Regarding Effectiveness of Tobacco Dependence Treatments: Results from the NJ Health Care Provider Tobacco Survey

Michael B. Steinberg, MD, MPH<sup>1,2</sup> and Cristine D. Delnevo, PhD, MPH<sup>2</sup>

<sup>1</sup>Robert Wood Johnson Medical School, University of Medicine and Dentistry of New Jersey, New Brunswick, NJ, USA; <sup>2</sup>School of Public Health, University of Medicine and Dentistry of New Jersey, New Brunswick, NJ, USA.

**BACKGROUND:** Physicians play an increasing role in tobacco dependence treatment as more prescription medications and community resources are developed. Beliefs about effectiveness can influence physicians' recommendations regarding treatment, so it is critical that these beliefs are evidence-based.

**OBJECTIVE:** Describe physicians' beliefs regarding effectiveness of tobacco treatments.

**DESIGN:** Self-reported, cross-sectional, mailed survey.

**PARTICIPANTS:** 336 primary care physicians in New Jersey (60.3% response).

**MEASUREMENTS:** Demographics, previous tobacco dependence training, awareness of guidelines, and perceived effectiveness of treatments.

**RESULTS:** Physicians believed combination medications and bupropion to be the most effective (89 and 88% reported somewhat or very effective, respectively) and nicotine nasal spray least effective (50%). For non-pharmacologic treatments, physicians believed behavioral counseling (69%) and programs including group treatment (67%) were most effective, whereas telephone counseling (25%) and internet-based treatment (23%) were the least. Female and non-U.S.-trained physicians generally believed treatments to be more effective.

**CONCLUSIONS:** Physicians in this sample believed that most cessation medications available and behavioral and group-based counseling are effective, which is supported by current evidence in the field. Low perceived effectiveness of telephone and internet treatments could hinder their utilization. Perceived effectiveness may affect physician recommendations. Therefore, training efforts to influence these beliefs warrant further attention.

**KEY WORDS:** physician; beliefs; effectiveness; smoking; cessation.

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## BACKGROUND

Current guidelines recommend that all smokers utilize effective cessation treatments, including pharmacotherapy.<sup>1</sup> Physicians play a key role in the identification, assessment, and treatment of smokers.<sup>2</sup> Their involvement is becoming more important as more prescription medications (e.g., varenicline) and treatment resources (e.g., quitlines and specialty clinics) come into existence. Although several studies have examined patient characteristics<sup>3-5</sup> and some physician characteristics<sup>6,7</sup> that influence receipt of smoking cessation treatment during a clinical encounter, less is known regarding physician beliefs of the effectiveness of various tobacco treatment interventions.<sup>8,9</sup> Common sense suggests that physicians are more likely to recommend treatments that they believe are effective, although this is not always the case. Therefore, it is critical that these beliefs are evidence-based as they play a role in clinical decision making.

This study describes the beliefs of a sample of physicians regarding the effectiveness of various tobacco treatments, including cessation medications and several modalities of counseling. The purpose is to determine if these beliefs are consistent with the evidence-based data in the field, and whether there are certain characteristics that impact these beliefs.

## METHODS

### Instrument

The New Jersey Health Care Provider Tobacco Survey (NJHCPTS) was designed to target practitioners serving 3 patient populations: adults, adolescents, and pregnant women. The sample design and methodology of the NJHCPTS is described in detail elsewhere.<sup>10</sup> Briefly, the survey was a self-administered, mailed survey, distributed in up to 3 waves with reminder postcards if no response was received.

### Sample

The focus of this study was practitioners serving adults. The adult patient survey was administered to 700 physicians (148 family practitioners, 52 general practitioners, and 500 general internists) during 2002. General practitioners have a mini-

mum of 1 year postgraduate training, whereas internists and family practitioners have a minimum of 3 years postgraduate training. Family practitioners treat children as well as adults. The sampling frame for physicians in New Jersey was obtained from the American Medical Association's (AMA's) master list of licensed physician. This AMA master list is not limited to AMA members and is considered to be the most complete repository of physicians' names, addresses, and specialties in the United States. Of the original 700 physicians, 143 were determined to be ineligible for various reasons, including nonpatient care activities, retirement, or relocation.<sup>10</sup> The final sample of eligible physicians was 557. Overall, 336 physicians responded to the adult patient survey (response rate=60.3%) and were demographically representative of New Jersey physicians overall.

## Measures

The key study variables collected included demographics, training, practice type, previous tobacco training, tobacco use history, and perceived effectiveness of treatments, including cessation medications (nicotine patch, gum, inhaler, nasal spray, bupropion, and combination [multiple nicotine and/or bupropion] medications) and nonpharmacologic treatments (behavioral counseling, programs with group treatment, telephone counseling, and internet-based treatment). The primary outcome was belief of effectiveness for the various treatments. This was assessed by responding to the question, "How effective do you believe the following methods are in helping smokers quit?" Physicians could indicate "not at all effective, minimally effective, somewhat effective, and very effective."

## Analyses

Relationships between demographic characteristics and belief of effectiveness were examined using chi-square test ( $\chi^2$ ). The surveys were analyzed with Statistical Program for Social Sciences (SPSS) (version 1.0, 2005).

## RESULTS

Table 1 describes the characteristics of the physician respondents. The mean age of respondents was 49 years (range 30–86). The majority of respondents were white, male, trained in the United States, and worked in solo or group practices. Awareness of the U.S. Public Health Service Clinical Practice Guidelines<sup>1</sup> was low with nearly half of physicians having never heard of the guidelines and only 6% reported implementing them.

Table 2 describes the respondents' beliefs regarding effectiveness of smoking cessation treatments. The majority of physicians believed that all of the cessation medications (nicotine patch, gum, inhaler, nasal spray, bupropion, and combination medications) were at least somewhat effective, ranging from 50% for the nasal spray to 89% for combination medications. In terms of nonpharmacologic treatments, there was a wider variation in beliefs of effectiveness with most physicians believing behavioral and group treatment to be effective whereas 25% or less believed telephone and internet-based treatment was effective.

Certain physician characteristics were associated with higher levels of perceived effectiveness. Female physicians compared with male physicians believed several medications to be more effective: nicotine patch (84 vs 70% reported at least somewhat effective [ $P=.038$ ]), bupropion (92 vs 85% [ $P=.018$ ]), and combination medications (93 vs 87% [ $P=.040$ ]). More female compared with male physicians also believed that nonpharmacologic interventions were at least somewhat effective: telephone (37 vs 20% [ $P=.020$ ]), internet-based (40 vs 16% [ $P<.001$ ]), behavioral counseling (79 vs 65% [ $P=.001$ ]), and programs with group treatment (82 vs 61% [ $P<.001$ ]).

Other characteristics related to differing beliefs included non-U.S. compared with U.S.-trained physicians believed nonpharmacologic interventions were more effective: telephone (33 vs 21% [ $P=.041$ ]), internet-based (33 vs 18% [ $P=.041$ ]), and behavioral counseling (72 vs 68% [ $P=.012$ ]). Finally, physicians who had previously received tobacco dependence training believed that programs with group treatment were more effective (77 vs 65% [ $P=.018$ ]), whereas nasal spray (10 vs 2% [ $P=.005$ ]) and combination medications (49 vs 29% [ $P=.013$ ]) were more likely to be perceived as very effective compared

Table 1. Characteristics of Physician Respondents

Characteristic	Demographic distribution	
	n	%
Overall	336	100
Age		
35 and younger	33	10
36–45	101	31
46–64	165	50
65 and older	31	9
Gender		
Male	236	71
Female	98	29
Ethnicity/Race		
White	228	69
Asian	71	21
Other	32	10
Location of Training		
United States	234	70
Outside United States	100	30
Practice type		
Solo	125	37
Group (single specialty)	144	43
Multispecialty	17	5
Employee of hospital	29	9
Employee of state/federal agency	8	2
Other	13	4
Specialty		
Family medicine	74	22
Internal medicine	245	73
General practice	17	5
Smoking status		
Never	248	74
Former	77	23
Current	11	3
Awareness of PHS guidelines		
Never heard of guidelines	150	45
Heard of guidelines	140	42
Read guidelines	24	7
Implemented guidelines	19	6
Had training in smoking cessation		
Yes	79	24
No	257	76

**Table 2. Beliefs Regarding Effectiveness of Tobacco Dependence Treatments**

	Not at all effective (%)	Minimally effective (%)	Somewhat effective (%)	Very effective (%)
<b>Medication</b>				
Combination medications (n=316)	3	8	55	34
Bupropion (n=326)	1	11	65	23
Patch (n=329)	2	24	65	9
Gum (n=328)	6	38	52	4
Inhaler (n=303)	7	38	51	4
Nasal spray (n=298)	10	40	46	4
<b>Nonpharmacologic treatment</b>				
Behavioral counseling (n=328)	3	28	54	15
Programs with group treatment (n=314)	4	29	52	15
Telephone (n=300)	23	52	22	3
Internet (n=292)	21	56	21	2

with physicians who had not had training. No other physician characteristics were significantly related to beliefs regarding effectiveness.

**DISCUSSION**

Physicians' beliefs regarding the effectiveness of tobacco dependence interventions were generally supported by evidence-based data for most cessation medications and counseling treatments (Table 3). The beliefs regarding some nicotine medications and telephone and group treatments had some inconsistencies with the literature. Perceived effectiveness of the various cessation medications is supported by research evidence.<sup>11-15</sup> The belief that behavioral counseling and programs including group treatment are effective is also consistent with the current evidence-based data.<sup>16,17</sup> Some of the reported physician beliefs were not supported by experimental or clinical data. Physicians in this study believed the patch to be the most effective form of nicotine medication. Data comparing effectiveness of nicotine medications actually show similar effectiveness among various forms, with the nasal spray and inhaler having nonstatistical significantly higher abstinence rates than the patch.<sup>1,11</sup> Interestingly, these two medications were perceived to be least effective.

There are many factors potentially influencing physician beliefs, including pharmaceutical industry activities, prescription versus over-the-counter (OTC) status of medications, and familiarity/experience with the treatments. As is its purpose, pharmaceutical marketing may influence a medication's perceived effectiveness among physicians. For this reason, physicians may perceive marketed prescription medications as more effective than OTC medications and this may partially explain the results that bupropion was perceived as more effective. However, prescription status alone does not translate into perceived effectiveness. Because the nicotine inhaler and nasal

spray comprise only a small proportion of cessation medications used (inhaler, spray, and lozenge combined were used by 3.7% of smokers who recently quit<sup>18</sup>), most physicians have had little exposure to these medications despite their prescription status. The familiarity with the patch by physicians is much greater than that for the inhaler or nasal spray, possibly contributing to the belief that the patch is superior.

The low perceived effectiveness for telephone and internet-based treatments are interesting and not supported by current research that suggests these are effective interventions.<sup>19,20-22</sup> Telephone quitlines are expanding on a statewide and national level, as are internet-based tobacco interventions. If these modalities are to be fully implemented, it is important that physicians, who may recommend them to their patients, are aware of their true effectiveness. If this study's findings are an indication, physicians currently do not have much belief in the effectiveness of these treatments, and thus may not utilize them.

Personal characteristics of physicians also seem to influence perceived effectiveness. Female physicians and those trained outside the United States indicated higher beliefs of effectiveness for several treatments. Female physicians have traditionally been more prevention-oriented in their clinical care, such as counseling for condom use<sup>23</sup> and drug use and sexual behaviors.<sup>24</sup> Therefore, they may be more willing to see tobacco interventions as potentially effective. The findings that non-U.S.-trained physicians believed that some counseling interventions had higher levels of effectiveness could be explained by their training being more focused on observation, interpersonal relationships, and history taking (the foundations of counseling) and less on technology. This has been suggested in previous studies that have found higher rates of preventive services among non-U.S.-trained physicians.<sup>25</sup>

The limitations of this study include a response rate of 60%. Although this figure is above the published average for physician surveys, it is not optimal. Self-reported beliefs

**Table 3. Effectiveness of Selected Tobacco Dependence Treatments**

Treatment	Number of studies in analyses (n)	Estimated odds ratio (95% confidence interval)	Estimated abstinence rates (%) (95% confidence interval)
<b>Medications</b>			
Nicotine nasal spray	3	2.7 (1.8-4.1)	30.5 (21.8-39.2)
Nicotine inhaler	4	2.5 (1.7-3.6)	22.8 (16.4-29.2)
Bupropion SR	2	2.1 (1.5-3.0)	30.5 (23.2-37.8)
Combination NRT	3	1.9 (1.3-2.6)	28.6 (21.7-35.4)
Nicotine patch	27	1.9 (1.7-2.2)	17.7 (16.0-19.5)
Nicotine gum	13	1.5 (1.3-1.8)	23.7 (20.6-26.7)
<b>Nonpharmacologic</b>			
Individual counseling	58	1.7 (1.4-2.0)	16.8 (14.7-19.1)
Group treatment	58	1.3 (1.1-1.6)	13.9 (11.6-16.1)
Telephone treatment	58	1.2 (1.1-1.4)	13.1 (11.4-14.8)

Results based on U.S. Public Health Service Guidelines (2000)<sup>1</sup>

should be adequately collected by an anonymous survey with no incentives for specific responses. Also, newer tobacco treatments have been developed since this study was conducted (e.g., lozenge and varenicline) and are thus not included.

Overall, more education may be useful for physicians, especially regarding benefits of prescription forms of nicotine medications and telephone and internet-based interventions. Because training seems to be related to higher perceived effectiveness for some of the interventions (group treatment, nasal spray, and combination medications), trainings could be a good start to increase knowledge. Settings could include U.S. medical schools (considering U.S.-trained respondents reported lower beliefs of effectiveness) and utilize specialized tobacco treatment trainings/continuing medical education that are being initiated in several states.

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**Corresponding Author:** *Michael B. Steinberg, MD, MPH; Robert Wood Johnson Medical School, University of Medicine and Dentistry of New Jersey, 125 Paterson Street, New Brunswick, NJ 08903, USA (e-mail: michael.steinberg@umdnj.edu).*

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