Published in final edited form as:

Ann Vasc Surg. 2017 January ; 38: 113–121. doi:10.1016/j.avsg.2016.06.005.

Impact and duration of brief surgeon-delivered smoking cessation advice on attitudes regarding nicotine dependence and tobacco harms for patients with peripheral arterial disease

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On behalf of the VAPOR investigators (complete list in Appendix)

Abstract

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This data was presented at the 26th Annual Meeting of the Vascular and Endovascular Society (Feb 4–7, 2015, Park City, UT)

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Background—Despite the recognized benefits of smoking cessation, many clinicians question if a brief smoking cessation intervention can help dedicated smokers with peripheral arterial disease understand nicotine dependence and harms related to smoking. We investigated the impact and durability of a multi-modal smoking cessation intervention on patient attitudes regarding nicotine dependence and the health effects of smoking.

Methods—We conducted a pilot cluster randomized trial of a brief smoking cessation intervention at eight vascular surgery practices between September 1, 2014 and August 31, 2015. Compared with control sites, patients at intervention sites received protocolized brief cessation counseling, medications and referrals to a quitline. After their clinic visit and again at 3 months, participants completed a brief survey about patient attitudes regarding nicotine dependence and the health effects of smoking. Responses to questions were analyzed using Chi² and student's t-tests.

Results—All trial participants (n=156) complete the initial survey, and 75 (45%) participants completed the follow-up survey. Intervention and control patients both reported a greater than 30-pack-year history (80% vs 90%, p=0.07) and previous failed quit attempts (77% vs 78%, p=0.8). Compared to usual care, patients in the intervention group were more likely to describe hearing advice to quit from their surgeon (98% vs. 77%, p<0.001), and expressed “a lot” or “some” interest in quitting (95.4% vs 85.7%, p=0.05). Patients in the intervention group were also more likely to acknowledge their addictive behaviors, consistently scoring higher on question bank items regarding nicotine addiction (52.9 vs 48.0, p=0.006) and the negative health effects of smoking (scaled score 56.6 vs 50.6, p=0.001). When re-surveyed three months after intervention, patients in the intervention group had larger declines in nicotine dependence and health effects domains, suggesting durable impact of the intervention on patient attitudes regarding nicotine addiction and smoking harms.

Conclusions—Brief smoking cessation counseling by a vascular surgeon increases patient interest in smoking cessation and awareness of smoking harms, and this effect was durable three months after intervention. This evidence suggests that even brief counseling within a surgical clinic has the potential to impact patient desire to quit.

Introduction

Smoking cessation is an essential component of treatment of peripheral arterial disease as it is associated with diminished progression of disease, improvement of graft survival after interventional procedures, and reduction in perioperative complications.^{1–5} The Centers for Disease Control (CDC) guidelines recommend standardized discussion of smoking cessation at every visit,⁶ and identify the perioperative period as an effective “teachable moment” for smoking cessation.^{7–9}

However, smoking cessation practices for patients facing surgery vary significantly.^{10,11} First, many surgeons report a perceived lack of time to deliver interventions, and a lack of knowledge regarding adjunct therapies (such as behavioral counseling and adjunct smoking cessation medications).^{12–19} Second, when smoking cessation counseling is delivered, research shows that it often focuses on identifying and cataloging the risky behavior rather than motivating patients to change it.^{20,21} Third, surgeons often doubt the efficacy of their own counseling—noting that long-term smokers are unlikely to be motivated to quit.^{12,22}

We found these concerns to be widely present in our preliminary work⁷ despite a large body of evidence showing that perioperative smoking cessation counseling efforts by surgeons can be successful.²³

To better understand how patients facing vascular treatments understand smoking cessation interventions, we surveyed patients enrolled in a randomized trial of standardized smoking cessation that utilized 3 interventions: 1) protocolized smoking cessation advice given to the patient by the surgeon, 2) nicotine replacement therapy, and 3) referral to a free tobacco quitline. We used validated survey instruments of both smoking cessation interest and factors related to quit rates to measure the impact of surgeon-delivered advice and referral on patient interest to quit smoking, and acknowledgement of tobacco addiction and the health effects of smoking. We hypothesized that such smoking cessation advice would have a measurable impact on patient attitudes toward their own smoking, and this impact would be durable over time.

Methods

We conducted a pilot, multi-center, cluster-randomized trial of a brief smoking cessation intervention called the Vascular Physician Offer and Report (VAPOR) Trial at eight clinical sites throughout the United States. The intervention consisted of brief smoking-cessation advice delivered by the physician, prescription for pharmacological therapy (nicotine replacement therapy and non-nicotine-replacement cessation medications), and referral to a tobacco quit line. Development of this intervention is described in our earlier work.²⁴

Patients in the control group received usual smoking cessation care. This care varied greatly from site to site, and likely from surgeon to surgeon. At certain control sites, surgeons offered only nominal smoking cessation counseling without prescription for NRT or referral to quit lines or tobacco counselors, while one control site already had a comprehensive preoperative smoking cessation program in place, which offered in-house tobacco cessation counseling and regular offering of NRT.

As part of this clinical trial, at the conclusion of each patient's initial clinic visit, study participants completed a survey of their demographics, smoking history, desire for smoking cessation, and perception of nicotine dependence. These questions were formulated using validated instruments called the Patient-Reported Outcomes Measurement Information System (PROMIS) Smoking Item Banks, developed by the RAND Corporation from existing psychometric measurement tools, and validated through a series of focus groups and a large cross-sectional sample of smokers.^{25–28} Smoking Item Banks provide standardized measures of smoking-related domains that can be used as primary or secondary endpoints in clinical studies of the effectiveness of various treatments.

When surveying study participants during their clinic visit, we focused on short form versions of two item banks: nicotine dependence (4 items) and health expectancies of smoking (6 items). These Item Banks were chosen by the VAPOR investigators after initial pilot testing on a select group of vascular surgery patients because of the high correlation of

nicotine dependence as well as harm perception with successful quitting attempts. The survey in its original form is available as a supplementary Appendix.

In both the intervention and control groups, patients were seen at 3 months following the intervention. In addition to our primary endpoint of smoking cessation at three months, our surveys of nicotine dependence and health expectancies of smoking were also repeated at three months. Additionally the effect of the intervention was examined in subgroups of long-term smokers (defined as over 40 pack years) and heavy smokers (greater than one pack per day).

Scores were compared between intervention and control groups, as well as within groups, at enrollment and at three-month follow-up. Analysis of survey data was conducted using non-parametric (Mann Whitney U test) tests for ranked responses. Chi-squared tests were used to categorize non-ranked responses, including desire to quit smoking. For aggregate scores on each survey section, scores were scaled per the original survey to reflect a population mean of 50 and t-tests were used for comparison. A p-value of <0.05 was considered significant. All analyses were conducted using Stata 14 (College Station, Texas).

Institutional Review Board approval was obtained at each study site. A Multicenter Clinical Studies Grant from the Society for Vascular Surgery supported the development and implementation of the pilot trial.

Results

Patient Demographics

A total of 156 (65 intervention, 91 control) patients were enrolled in the trial. Patients in both intervention and control groups were similar in terms of their educational status (Table 1). Smoking history was similar between the two groups, with patients in both intervention and control groups smoking slightly less than a pack per day (14.9 vs 14.2 cigarettes, $p=0.6$). Notably, patients in the control group had a longer pack-year history of smoking (37 vs 42 pack-years, $p=0.03$), but a similar proportion of both groups had a greater-than-30-year history of smoking (80% vs 90%, $p=0.07$).

Most patients had one or more previously successful quit attempt (78% vs 77%, $p=0.8$), with similar previous use of adjunct medications or nicotine replacement (61.5% vs 64.8%, $p=0.6$) or a smoking cessation program (23.1% vs 14.3%, $p=0.14$). Patients had commonly received smoking cessation advice before our study intervention, often from their primary care physician (76.9% vs 82.4% $p=0.4$) or from their vascular surgeon (76.9% vs 65.9%, $p=0.13$).

The intervention attempted to standardize delivery of smoking cessation counseling, nicotine replacement, and quitline referral. Compared to usual care, patients in the intervention group more reliably received cessation counseling during their clinic visit (98.5% vs 76.9%, $p<0.0001$), more commonly received nicotine replacement therapy or cessation medications (76.9% vs 15.4%, $p<0.0001$), and were more likely to be referred to a quitline (93.9% vs 33.0%, $p<0.0001$). Further, more patients in the intervention group reported “a lot” or

“some” interest in quitting following their appointment with the vascular surgeon (95.4 vs 85.7%, $p=0.05$).

Desire to Quit and Smoking cessation

Patients were surveyed after their initial appointment regarding their desire to quit smoking. Patients who received the intervention were more likely to express “a lot” or “some” interest in quitting (95.4% vs 85.7%, $p=0.05$). When we examined the relationship of quit desire to actual smoking cessation, we noted that 37% vs. 23% of patients who expressed a strong vs. weak desire to quit, were successful ($p=0.325$, table 2).

Nicotine Dependence at study enrollment

The first part of the survey addressed patient awareness of cravings or withdrawal that occurs on brief smoking cessation, temptations, compulsive use, and tolerance. Patients in the intervention group more frequently indicated strong agreement with several questions regarding smoking addiction. The overall score on questions regarding nicotine dependence was higher for patients who received the intervention (52.9 vs 48.0, $p=0.006$), indicating a higher acknowledgement of their tobacco addiction.

The second part of the survey examined negative health expectancies among study participants, which assesses smokers’ perceptions of current and long-term health consequences of smoking. The summary score on questions regarding negative health effects of smoking was higher for patients who received the intervention (56.6 vs 50.6, $p=0.001$), indicating a higher acknowledgement of the harms of tobacco use.

Subgroup Analysis: Long-term smokers and heavy smokers

We examined our findings in the group of smokers with over a 40 pack-year smoking history (61%). Again, patients in the intervention group scored higher on questions regarding nicotine addiction (53 vs 48.1, $p=0.05$), the harms of tobacco use (55.3 vs 49.6, $p=0.02$).

Heavy smokers, defined in our analysis as smoking more than 1-pack-per-day (20 cigarettes) represented the 25th percentile of smoking within our study population. There was overall no difference in nicotine addiction scores (54.7 vs 51.1, $p=0.07$), though the intervention group continued to score higher on questions regarding the harms of tobacco use (56.0 vs 50.7, $p=0.04$).

However, when we examined the effect of the intervention in heavy, long-term smokers—those who currently smoked over 1-pack-per-day and had been smoking for over 40 pack-years—there was no difference in scores in either nicotine dependence or negative health expectancies.

Differences between scores at enrollment and scores at 3 month follow-up

Of the 156 enrollees, 89 (57%) were still smoking, and 49 (31%) had quit; three patients (2%) died, and 15 (9.6%) were lost to follow-up. All patients were asked to complete the same survey at time of enrollment and at time of 3 month-follow-up. Among those who followed up, 75/89 (84%) patients filled out a complete repeat survey. They were asked the

same questions regarding their smoking status and behavior toward smoking as they were at the time of enrollment. Answers to each question were on a 5-point Likert Scale with higher values indicating a greater agreement of the patient with the statement.

The mean answer scores to these questions, both at time of enrollment and 3 months later are summarized in Table 4. For patients in the intervention group, there was a significant decline in each score that assessed their smoking status. Patients were dramatically less likely to reach for cigarettes without thinking, drop everything to buy cigarettes, smoke before entering a situation where smoking is not allowed and less likely to crave cigarettes. Similarly in the intervention group, there was a measurable trend of decline of scores regarding attitude toward smoking.

In the control group, on the other hand, we noted a much less pronounced decline in survey scores. For example, there was no change in scores regarding patient likelihood to reach for cigarettes without thinking or smoking before entering a smoke-free situation. Further, there was a less pronounced decline in scores for buying cigarettes and craving cigarettes when compared to the intervention group. Regarding attitude toward smoking, there was a comparable mild improvement in the control group as noted in the intervention group.

Finally, we examined differences in scores in both domains among patients who did or did not quit smoking. We noted that those who quit smoking had significantly higher scores (55.5 vs 51.6, $p=0.01$) across the negative health domains.

Discussion

Patients who received brief, physician-delivered smoking cessation counseling, along with offers for smoking cessation medications and referral to telephone-based counseling were more likely to be very interested in smoking cessation following their clinic visit. They reported higher rates of cessation counseling, medication prescriptions, and quitline referrals than those receiving usual care. Patients who received our intervention consistently scored higher on survey questions regarding their nicotine dependence and the harms of smoking—indicating they recognized both the harms of smoking and acknowledged their addiction. Even though our pilot study was not powered to adequately assess these subgroups, we found the treatment effect persisted even among long-term or heavy smokers, though not for those patients who were both long-term and heavy smokers.

The results of this study do not address the impact of our intervention on long-term quit rates among our study participants. However, multiple large clinical trials and systematic reviews have noted the success of the techniques utilized within our study. Cochrane systematic reviews of randomized control trials have found that physician counselling, telephone-based counseling, and the use of adjunct medications all increase quit rates among smokers, when compared with usual care.^{29–31} The combination of these techniques—physician counselling coupled with medications or additional support via telephone or in-person counseling increase quit rates by as much as 82%.³² Our study focused on the impact these already-proven cessation techniques would have on an intermediate goal—patient motivation to quit.

Our survey revealed that patients who received brief counseling, coupled with cessation-related medications and a quitline referral scored higher on question bank items related to the negative health effects of smoking.³³ In initial development of the PROMIS Smoking Item PSI toolkit, these items showed a significant positive correlation with interest in quitting.³⁴ Earlier research has similarly shown that smokers who acknowledge the risks of smoking were associated with both intentions to quit and successful quit attempts, as well as a longer period of smoking abstinence.^{35,36}

Nicotine dependence is a known barrier to successful quit attempts, with multiple studies noting an inverse correlation with successful quit attempts.^{37,38} For this reason, multiple randomized control trials have found that the use of nicotine replacement therapies to ease withdrawal symptoms results in consistently higher quit rates.^{39,40} We suspect the higher scores of intervention patients in this section of the study reflects an increased recognition of smoking addiction, and will result in higher use of cessation-related medications.

Limitations

Because the sites were randomized to deliver the standardized protocol, we note that pack-year history—a potential confounder—differed between the intervention and control groups. We believe this difference is of little clinical significance, as both groups represented a population with a long history of smoking. Furthermore, subgroup analysis showed similar effects of the intervention even among smokers with a long-term smoking history.

A further limitation of our survey is that it was delivered following the intervention, rather than both beforehand and following. We did this as a part of our study design, to ensure high completion rate of the survey, and mitigate costs associated with multiple survey administrations. A baseline assessment, while methodologically preferable, would have added significant expense beyond our funding constraints. Despite this limitation, there is little reason to believe that the intervention group would have a higher baseline desire to quit smoking or higher recognition of the harms of smoking or nicotine addiction.

Third, approximately 15% of patients who did not quit smoking at the follow up visit did not fill out a survey at their visit. We were unable to evaluate differences in both nicotine domains and negative health effects from initial to 3-month follow up based on quit status. However, these item banks are intended to be cross sectional, and significance of score changes is yet unknown.

Another potential limitation to the methodology of both our trial and survey instrument is the potential for selection bias—specifically in that the patients who enrolled in our trial were inherently more interested in smoking cessation than those who did not. As we cannot study patients who did not enroll, we cannot fully answer this question. Nearly all (90%) enrolled patients expressed some desire to quit smoking, while the most recent CDC data notes that nearly 70% of current smokers are interested in quitting.⁴¹ However, it has been noted in previous literature that the preoperative period represents a teachable moment, when both interest in quitting and successful quit attempts are substantially higher.^{2,7,42,43} As we cannot study the motivations of patients not enrolled in our trial, it is difficult to tell whether

the higher rates of quit interest within our study population were due to selection bias or an inherently higher motivation to quit among those seen in a preoperative context.

A fifth potential limitation regards the survey instrument itself—the PROMIS Smoking Item Banks was developed using a cross-section of smokers. As such, we do not specifically know the relationship of higher scores in each domain with long-term success of quitting. However, each aspect of the survey—namely nicotine dependence or harm recognition—has been extensively tested in relation to both quit interest and successful quit attempts. The advantage of using highly reliable, standardized measures in clinical trials such as our own will inform future research into this relationship.

Finally, our survey revealed the impact of a physician-delivered survey on patient attitudes toward smoking cessation, not on the likelihood of physicians to adhere to the treatment protocol outside of the trial. In the course of the trial, we conducted focus groups with the surgeons involved in this study—discussed in an earlier publication from our group—which noted that implementation of the study protocol was feasible in a clinical setting.⁴⁴

Conclusions

Brief, surgeon-delivered and evidence-based smoking cessation advice has a measurable impact on patient desire to quit, recognition of nicotine addiction, and acknowledgement of smoking harms in the vascular surgical clinic. Educational efforts should focus on disseminating this brief study protocol to vascular surgeons, ensuring effective, evidence-based delivery of smoking cessation among patients.

Acknowledgments

FUNDING/DISCLOSURES: This study was funded by a multicenter clinical studies pilot grant from the *Society for Vascular Surgery* and was an oral presentation at the 26th annual Vascular and Endovascular Society Winter Meeting, Park City, UT (2/4–2/7/2016)

The VAPOR study was funded by a multicenter clinical trial grant from the Society for Vascular Surgery (PI: Alik Farber and Philip Goodney)

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Appendix B: Patient Survey

Study ID# _____

VAPOR Trial Initial Visit Questionnaire
(White: fill out in VQI; Grey: VQI or paper; Dark Grey:
Paper only)

1. During your visit in vascular surgery today, did a doctor, nurse or other health care provider advise you to stop smoking?	Yes ☐	No ☐
2. Did you receive a prescription today for nicotine replacement (gum, lozenge, or patch)?	Yes ☐	No ☐
3. During your visit in vascular surgery today, did a doctor, nurse or other health care provider suggest you use a telephone quitline to help you quit smoking?	Yes ☐	No ☐

4. Your highest level of education is:	☐ Less than High	☐ High School Graduate	☐ Some College	☐ College or higher	
5. How interested are you in quitting?	☐ A lot (1)	☐ Some (2)	☐ A little (3)	☐ Not at all (4)	
6. How many years have you smoked?	# _____				
7. How many cigarettes do you smoke each day?	# _____				
8. Have you ever previously used medication for your tobacco dependence (patch, gum, bupropion, etc)?	☐ Yes	☐ No			
9. Have you ever previously participated in a smoking cessation program of any sort (group, individual, telephone counseling, etc)?	☐ Yes	☐ No			
10. Before today, have you ever been counseled to stop smoking by your primary care doctor?	☐ Yes	☐ No			
11. Before today, have you ever been counseled to stop smoking by your vascular surgeon?	☐ Yes	☐ No			
12. Have you been able to quit smoking before for more than 1 week?	☐ Yes	☐ No			
Please indicate how frequently you agree with the following statements:	Never	Rarely	Sometimes	Often	Always
13. I find myself reaching for cigarettes without thinking about it.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
14. I drop everything to go out and buy cigarettes.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
15. I smoke more before going into a situation where smoking is	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
16. When I haven't been able to smoke for a few hours, the craving gets	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

Please indicate how much you agree with the following statements:	Not at all	A little bit	Somewhat	Quite a bit	Very much
17. Smoking is taking years off my life.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
18. Smoking makes me worry about getting heart troubles.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

19. Smoking causes me to get tired easily.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
20. Smoking makes me short of breath.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
21. Smoking irritates my mouth and throat.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
22. I worry that smoking will lower my quality of life.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

v. 6/30/14

Study ID # _____

VAPOR Trial 3-Month Follow-up Visit Questionnaire

1. Have you smoked, even a puff, in the last 7 days?	☐ Yes	☐ No	If yes, please complete the questions below. If no, you are finished with the questionnaire
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If you answered "Yes" to the question above, please mark how much you agree with the statements below:

	Never	Rarely	Sometimes	Often	Always
2. I find myself reaching for cigarettes without thinking about it.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
3. I drop everything to go out and buy cigarettes.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
4. I smoke more before going into a situation where smoking is not allowed.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
5. When I haven't been able to smoke for a few hours, the craving gets intolerable.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
6. Smoking is taking years off my life.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
7. Smoking makes me worry about getting heart troubles.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
8. Smoking causes me to get tired easily.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
9. Smoking makes me short of breath.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
10. Smoking irritates my mouth and throat.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
11. I worry that smoking will lower my quality of life.	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

Table 1

Patient characteristics, by control group

	Intervention	Control	p-value ^I
N	65	91	
Age in years, mean (SD)	60.2 (7.6)	61.6 (7.8)	0.28
Gender (% male)	64.90%	76.50%	0.14
Smoking History			
Pack-years, mean (SD)	37.4 (1.5)	41.8 (1.1)	0.02
Cigarettes per day, mean (SD)	14.9 (1.1)	14.2 (1.0)	0.64
Previous quit attempt (%)			
Previously used quitline (%)	23.10%	14.30%	0.16
Previous use of medications (%)	61.50%	64.80%	0.67
Previously quit more than 1 week	78.10%	76.90%	0.86
Education (%)			0.15
Less than high school	9.20%	15.40%	
Finished High School	38.50%	47.30%	
Some College	29.20%	27.50%	
College Graduate	21.50%	9.90%	
Previously told by Primary Care			
Physician to quit	76.90%	82.40%	0.397
Previously told by Vascular Surgeon to quit	76.90%	65.90%	0.138
Given quit advice by doctor this visit	98.50%	76.90%	<0.0001
Meds offered	76.90%	15.40%	<0.0001
Quitline referral	93.90%	33.00%	<0.0001
Follow-up			
Assessed quit status at 3 months	87.50%	92.10%	0.342
Filled out follow-up survey	35.40%	57.10%	0.007

^IT-test for continuous variables, chi-squared for categorical variables

Table 2

Quit desire and successful smoking cessation at 3 months, overall

Successfully quit	Interest in quitting	
	Strong	Weak
Yes	46 (94%)	3 (6 %)
No	79 (88%)	10 (12%)

p-value (Chi^2)=0.325

Table 3

Summed Survey Score, Nicotine Dependence and Negative Health Expectancies

	Intervention	Control	P-value ¹
Initial	(N=65)	(N=91)	
Nicotine dependence			
raw score	9.0 (3.6)	7.1 (4.4)	0.005
scaled score ²	52.9 (9.4)	48.0 (11.9)	0.004
Negative Health Expectancies			
raw score	14.1 (5.6)	10.2 (6.6)	0.0001
scaled score ²	56.6(8.3)	50.6(10.3)	0.0001
3-month follow up			
	N=23	N=52	P-value ¹
Nicotine dependence			
raw score (SD)	5.7 (3.3)	5.5 (3.2)	0.76
scaled score (SD) ²	44.5 (8.6)	43.9(8.4)	0.78
Negative Health Expectancies			
raw score (SD)	13.6(5.6)	9.0(6.1)	0.003
scaled score (SD) ²	55.9 (8.3)	48.9 (8.7)	0.004

¹ Student's t-test² Scaled using RAND Smoking Assessment Toolkit (<http://www.rand.org/content/dam/rand/www/external/health/projects/promis>)³ Combined score=scaled nicotine dependence score + scaled negative health expectancies score

Table 4

Differences between scores at intervention and at 3-month follow up

	Intervention group			Control Group			Mean change, by intervention and control group		
	Initial Visit	3 Month Visit	p-value ¹	Initial Visit	3 Month Visit	p-value	Intervention group	Control group	p-value ²
Nicotine Dependence									
I find myself reaching for cigarettes without thinking	2.9	2.2	0.09	2.2	2	0.39			
I drop everything to go and buy cigarettes	1.5	0.9	0.11	1.6	0.9	0.0008			
I smoke more before going into a situation where smoking is not allowed	1.9	1.4	0.14	1.8	1.6	0.44			
After not smoking a few hours, the craving gets intolerable	1.6	1.3	0.24	1.6	1	0.005			
Summary score									
Raw	7.9	5.7	0.03	7.1	5.5	0.004	2.17 (4.5)	1.6 (3.7)	0.56
Scaled ³	50.3	44.5	0.03	47.8	43.9	0.007	5.7 (12.0)	3.9 (9.8)	0.53
Negative Health Effects of Smoking									
Smoking:									
...takes years off my life	2.5	3	0.01	2.3	2	0.06			
...makes me worried about heart disease	2.1	2.3	0.45	1.5	1.6	0.37			
...causes me to get tired easily	1.7	1.7	0.89	1.3	1.3	1			
...makes me short of breath	2.2	2.5	0.62	1.8	1.6	0.23			
...irritates my mouth and throat	1.4	1.2	0.14	1	0.6	0.06			
...lowers my quality of life	2.3	2.9	0.01	2	1.8	0.44			
Summary score									
Raw	12.3	13.6	0.18	10.1	9	0.19	-1.34 (4.7)	1.04 (5.4)	0.06
Scaled	54.2	55.9	0.23	50.5	48.9	0.19	-1.7 (6.9)	1.6 (8.4)	0.06

¹ Paired t-test² Unpaired t-test³ Scaled using RAND Smoking Assessment Toolkit