

ORIGINAL INVESTIGATION

Medicinal Nicotine Nonuse: Smokers' Rationales for Past Behavior and Intentions to Try Medicinal Nicotine in a Future Quit Attempt

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ABSTRACT

Introduction: Nicotine replacement therapy (NRT) is a proven smoking cessation treatment. Previous research has reported low rates of NRT use among quit attempters. This study analyzed population-level nonuse rates and reasons for not using NRT.

Methods: Data were from the 2008 adult Colorado Tobacco Attitudes and Behaviors Survey (TABS), a population-based, random-digit-dialed telephone survey ($n = 14,156$). Primary measures were past NRT nonuse and future intentions regarding NRT use among current smokers intending to quit. Multiple logistic regression was used to identify reasons for past NRT nonuse associated with intention to use NRT in the future, adjusted for factors known to influence NRT use.

Results: Nearly, 80% of 1,095 current smokers who intended to quit had never used NRT. The most common reasons for nonuse were belief that “willpower” alone is sufficient for cessation (21.5%), perceived lack of NRT effectiveness (15.6%), and cost (14.3%). Willpower was more widely reported among Hispanics than Anglos (36.9% vs. 14.7%) and nondaily versus daily smokers (30.4% vs. 12.5%). Most previous NRT nonusers reported they would use cold turkey (65.2%) in their next quit attempt; NRT was the next most common choice (15.0%). In multivariate analysis, smokers identifying cost or willpower as a reason for previous nonuse had significantly lower odds of planning to use NRT in a future quit attempt.

Conclusions: The majority of smokers have never used NRT and do not plan to use it in the future. Cost and belief in willpower alone are significant barriers to using NRT in future smoking cessation attempt.

INTRODUCTION

Nicotine replacement therapy (NRT) is an effective smoking cessation treatment that is available in several forms, including patches, gum, lozenges, inhalers, and nasal spray (Fiore et al., 2008). NRT provides a safe way to help smokers quit by replacing some of the nicotine from cigarettes to reduce cravings (Kozlowski et al., 2007) and use of NRT increases the likelihood of quitting by about 50%–70% (Stead et al., 2012). However, NRT is underutilized. One population-based study in the United States found that fewer than one third of smokers who tried quitting in the past year (32.2%) used any type of pharmacological treatment, including NRT or prescription medications (Shiffman, Brockwell, Pillitteri, & Gitchell, 2008). Another U.S. study found that fewer than a quarter of smokers who attempted quitting in the previous year used any type of pharmacotherapy, including NRT (21.7%) (Cokkinides, Ward, Jemal, & Thun, 2005).

Some groups of smokers are less likely to use NRT. Compared with those who use it, those who do not are more likely to be younger (Bansal, Cummings, Hyland, & Giovino, 2004; Cummings, Hyland, Ockene, Hymowitz, & Manley, 1997; Shiffman, Di Marino, & Sweeney, 2005; Zhu, Melcer, Sun, Rosbrook, & Pierce, 2000), have completed less education (Cummings et al., 1997; Shiffman et al., 2005), and be African American/Black or Hispanic/Latino (Cummings et al., 1997; Fu et al., 2008; Levinson, Perez-Stable, Espinoza, Flores, & Byers, 2004; Zhu et al., 2000). Several studies have found that NRT nonusers smoke fewer cigarettes per day (Bansal et al., 2004; Cummings et al., 1997; Shiffman et al., 2005) and are less nicotine-dependent (Cummings et al., 1997; Shiffman et al., 2005). One population-based U.S. study found that never-use of NRT was more common among those who were nondaily smokers, had smoked for fewer years, and reported fewer quit attempts, less severe cravings, lower levels of withdrawal, and less difficulty quitting (Shiffman et al., 2005).

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Smokers' knowledge of and attitude toward NRT is likely to influence whether or not they use it, and misconceptions are widespread. For example, 73% of U.S. current smokers thought it was easy or did not know whether it was easy to get addicted to nicotine gum, and 41% disagreed or did not know whether NRT can improve the chance of quitting successfully (Cummings, Hyland, & Giovino, 2004). Another national U.S. study found that 66% of respondents believed NRT was as harmful as smoking or were unsure whether it was (Shiffman, Ferguson, Rohay, & Gitchell, 2008). A Swiss study found similar negative attitudes toward NRT, including fear of becoming addicted to it and concern about side effects (Etter & Perneger, 2001).

Few studies have examined explicit self-reported reasons why smokers do not use NRT. An English qualitative study identified themes for use versus nonuse as *effectiveness*, *desirability* (including adverse effects), and *access* (Vogt, Hall, & Marteau, 2008), and found in a convenience sample follow-up ($n = 212$) that perceptions about effectiveness predicted intention to use NRT in a future quit attempt. In a study of cessation treatment use among smokers in Vermont, cost and perception of effectiveness were the top reasons for not using NRT; the authors suggested a need for further research on reasons for nonuse of smoking cessation treatment (Hughes, Marcy, & Naud, 2009).

This study, among a state general population of smokers, sought to identify reasons for not using NRT, building on previous findings by identifying categories that emerged directly from the data. Analyses looked for demographic differences in reasons for nonuse among smokers who intended to quit. The study also looked for reasons for not previously using NRT that predicted use of NRT in a future quit attempt.

METHODS

Deidentified data were obtained from the 2008 adult Colorado Tobacco Attitudes and Behaviors Survey (TABS), a population-based, random-digit-dialed telephone survey using stratified landline and cellphone frames. The TABS collects data on demographics, smoking/quitting history, use of other tobacco, and attitudes toward tobacco policy. The overall response rates were 46.7% for landline respondents and 32.7% for cell phone respondents; respondents were weighted during analyses to represent the overall population of Colorado.

The 2008 survey interviewed adults (aged 18+) in their preferred language (English or Spanish). Smokers and former smokers, African American adults, and adults living in certain parts of the state were oversampled. Details of the survey methodology have been published elsewhere (Burns, Deaton, & Levinson, 2011). This study focused on current smokers (100+ lifetime cigarettes, now smoke daily or some days) who intended to quit in the future. Those who intended never to quit and pregnant women were excluded.

Outcome measures included ever-use of NRT, responses to an open-ended question about reasons for not previously using NRT ("People have different reasons for not using nicotine substitutes. What are the most important reasons why you have never used a nicotine substitute?"), and intended cessation method for next quit attempt. Based on previously reported associations with NRT use, we examined the following covariates

when building logistic regression models: demographic factors (sex, age, ethnicity, sexual orientation, insurance status, education, percentage of the federal poverty level [FPL], mental health diagnosis or limitation, rural/urban location), smoking-related factors (cigarettes per day, daily/nondaily smoking, timing of first morning cigarette), and cessation-related factors (ever called a quitline, number of previous quit attempts, cessation self-efficacy, and household smoking rule).

During survey data collection, responses to the reasons-for-NRT-nonuse item were recorded in precoded but unread categories that were based on previous studies; if a response did not match a precoded category, it was recorded verbatim. For this study, the verbatim responses were coded into new categories developed and independently assigned by two coders; a third coder resolved any differences. Interrater reliability using Cohen's Kappa was 0.8, which indicates substantial agreement (Cohen, 1960; Fleiss & Cohen, 1973; Landis & Koch, 1977).

Reasons for not using NRT, and intended method for next quit, were characterized by demographic and smoking/quitting factors. Multiple logistic regression was used to identify reasons for not using NRT that predicted whether a smoker would use NRT in a future quit attempt, adjusted for demographic, smoking, and quitting characteristics. All analyses were adjusted for survey design.

RESULTS

Nearly 80% of 1,095 smokers who intended to quit had never used NRT (Table 1). Hispanics had higher rates of NRT nonuse (91.0%) compared with Whites (76.3%), while Black/African Americans had lower rates of nonuse (72.0%) ($p = .001$ for three-category contrast). Age and NRT nonuse were inversely related (84.2% for aged 18–44 vs. 70.1% for aged 45+, $p = .0001$). Men had higher rates of nonuse compared with women (83.0% vs. 75.7%, $p = 0.04$). Other demographic characteristics were unrelated to NRT nonuse.

Measures related to smoking behavior were significantly related to NRT nonuse, with higher nonuse rates among light smokers (0–15 cigarettes per day; 82.3% vs. 70.0%, $p = 0.017$), nondaily smokers (87.9% vs. 74.7%, $p = .0007$), and longer time to first morning cigarette (>31 min; 80.5% vs. 68.3%, $p = .01$). Number of previous quit attempts was unrelated to NRT nonuse.

The NRT nonuse rate was twice as high among smokers who had never called a quitline (85.7% vs. 42.4%, $p < .0001$), and higher among smokers who were very sure they could quit (86.6% vs. 72.7%, $p = .0002$) or who lived in a home with a smoke-free rule (83.0% vs. 73.1%, $p = .008$).

The most common reason for not using NRT was belief in "willpower" or "no need for NRT," reported by 21.5% of smokers (Table 2). Other prevalent reasons included perceived lack of effectiveness (15.6%) and cost (14.3%). About 15.1% said they did not know why they had never used NRT.

Reasons varied by race/ethnicity and daily smoking status. More than twice as many Hispanics (36.9%) cited willpower/no need for assistance compared with Whites (14.7%). More Black/African Americans cited lack of effectiveness (28.4%), and more did not know how and where to get NRT (17.4%) compared with other races/ethnicities. The most common reason among nondaily smokers was willpower/no need for

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Table 1. NRT Never-Users (Weighted %) Among Current Smokers With Future Quit Intentions, by Demographic, Smoking, and Quitting Characteristics, Colorado 2008

	Weighted (%)	<i>n</i> = 811	<i>p</i> value
Sex			
Male	83.0	361	.0382
Female	75.7	450	
Age, years			
18–44	84.2	431	.0001
45+	70.1	380	
Ethnicity			
White	76.3	615	.0011
Hispanic	91.0	133	
Black/African American	72.0	63	
Smoking frequency			
Nondaily	87.9	280	.0007
Daily	74.7	531	
Average cigarettes per day			
≤15	82.3	647	.0167
>15	70.0	164	
Time to first morning cigarette			
>30 min	80.5	248	.0099
≤30 min	68.3	276	
Home rule			
Smoking is allowed	73.1	336	.0083
Smoking is not allowed	83.0	462	
Ever called a quitline			
No	85.7	711	.0000
Yes	42.4	100	
Confidence in ability to quit			
Very sure	86.6	438	.0002
All others	72.7	372	

Note. Time to first morning cigarette and presence of a home rule do not total *n* = 811 due to missing data. Poverty level, insurance status, education, sexual orientation, mental health status, and number of past-year quit attempts were not significantly associated with previous nicotine replacement therapy use.

NRT (30.4%), followed by lack of effectiveness (17.1%), while daily smokers were more likely to cite cost (22.4%) and less likely to cite willpower/no need for NRT (12.5%).

At the upper and lower levels of education (more than or equal to college graduate, less than or equal to general equivalency diploma), the most common reason was willpower/no need for NRT (31.4% and 17.5%, respectively). Respondents with middle levels of education were equally likely to cite willpower/no need for NRT and lack of effectiveness (19.5% and 19.6%, respectively).

Across most subpopulations, the most common intended strategy for the next quit attempt (Table 3) was cold turkey (65.2%), followed by use of a nicotine substitute (15.0%). Higher rates of cold turkey intention were reported by men, people aged 18–44 years, Latinos, college graduates and post-graduates, those at 100%–199% of the FPL, nondaily smokers, light smokers, those very sure of quitting, those who had not called a quitline and those who waited a longer time until their first morning cigarette.

In logistic regression (Table 4), cost and willpower/no need for NRT were significantly associated with intent to use NRT in a future quit attempt. Adjusted for demographic and quit characteristics, those who cited willpower as a reason for previous NRT nonuse had 94% lower odds ratio (*OR* = 0.06; 95% *CI* = 0.01, 0.29; *p* = .001) of saying they would use it in a future quit attempt; those who cited cost had 69% lower odds ratio

(*OR* = 0.31; 95% *CI* = 0.10, 0.97; *p* = .044) of saying they would use it. In the full multivariate regression model, poverty status and educational level remained predictors of intent to use NRT.

DISCUSSION

Among a state general population of smokers, the most common reason for never having used NRT was a belief that willpower alone determines the outcome of a quit attempt. Other common reasons included concern about cost and perception that NRT is ineffective. Previous studies have found similar beliefs, but to our knowledge this study is the first to estimate population-level prevalence of reasons for not using NRT, to identify the most common reason as a belief in willpower alone, and the first to find this reason most widespread among two growing population segments, Latinos, and light smokers. Further research should clarify what smokers mean by “willpower” in the context of cessation, and what messages and communications strategies may enhance individual and public recognition that tobacco dependence, like any dependence, is, by definition, a compromised state of willpower.

Nonuse of NRT may in part represent aversion to cessation treatment or assistance of any kind, not just NRT. In this study, respondents who had never called a state quitline were twice

Table 2. Reasons for Never Having Used Nicotine Replacement Therapy (Weighted %) Among Current Smokers With Quit Intentions, by Demographic, Smoking, and Quitting Characteristics, Colorado 2008 (n = 608)

	Willpower/ no need for NRT (%)	Lack of effectiveness (%)	Cost (%)	Afraid of addiction/ continuing nicotine (%)	Afraid will harm health (%)	Side effects (%)	Don't know how/where to get it (%)	Not addicted/ don't smoke much (%)	Wasn't ready/ didn't want to quit (%)	Don't know reason (%)	Other reason/ multiple reasons (%)
All	21.5	15.6	14.3	4.1	4.0	3.0	3.2	2.7	3.4	15.1	13.3
Sex											
Male	18.5	19.1	15.6	4.7	3.9	1.7	3.8	2.8	3.6	13.8	12.6
Female	26.4	9.8	12.0	3.0	4.1	5.1	2.0	2.7	3.0	17.2	14.6
Age, years											
18-44	20.7	17.5	15.4	4.4	4.3	3.2	3.4	2.8	3.1	12.3	13.0
45+	24.3	8.7	10.3	3.0	2.7	2.1	2.3	2.5	4.6	25.0	14.5
Education											
≤GED	17.5	10.0	12.3	7.0	4.7	3.2	4.3	7.2	6.1	16.7	10.9
HSG to <CG	19.5	19.6	16.6	3.5	4.9	3.1	3.7	0.2	2.6	10.0	16.3
≥CG	31.4	8.8	9.0	2.8	0.4	2.6	0.2	6.0	3.2	29.1	6.4
Ethnicity*											
White	14.7	15.4	18.3	5.3	4.7	3.5	1.3	1.8	3.3	14.3	17.5
Hispanic	36.9	13.7	7.8	1.2	2.3	2.3	4.3	4.9	4.1	17.3	5.3
Black/African American	10.6	28.4	6.0	6.1	5.0	1.6	17.4	0.7	0.5	11.8	11.9
Smoking frequency*											
Nondaily	30.4	17.1	6.2	4.2	5.9	1.2	2.3	5.1	3.5	10.4	13.8
Daily	12.5	14.1	22.4	3.9	2.1	4.7	4.0	0.4	3.3	19.8	12.8
Average cigarettes per day											
≤15	23.4	14.1	14.3	4.5	4.2	2.5	2.1	3.1	3.4	15.2	13.2
>15	8.5	25.3	13.7	1.1	2.5	6.4	10.2	0.0	3.5	14.6	14.4

Note. CG = college graduation; GED = general equivalency diploma; HSG = high school graduation; NRT = nicotine replacement therapy. Poverty, educational level, insurance status, rurality, sure of quitting, call to quitline, mental health diagnosis/limitation, sexual orientation, time to first cigarette, number of prior quit attempts, and smoking permitted in the home failed to reach statistical significance at the p < .05 level.

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Table 3. Intended Methods for Next Quit Attempt (Weighted %) Among NRT Never-Users, by Demographic, Smoking, and Quitting Characteristics, Colorado 2008 (*n* = 807)

	Cold turkey (%)	Nicotine substitute (%)	Quitline (%)	Gradually reduce (%)	Chantix (%)	Other (%)	Don't know (%)
All	65.2	15.0	1.5	7.9	3.5	5.4	1.6
Sex							
Male	70.6	12.1	0.8	8.4	2.7	4.1	1.2
Female	56.6	19.5	2.6	7.1	4.8	7.3	2.1
Age group, years*							
18–44	66.6	15.5	1.9	9.3	1.2	4.3	1.3
45+	61.1	13.5	0.4	4.0	10.0	8.5	2.5
Ethnicity*							
White	60.2	15.7	1.8	9.2	4.9	6.7	1.7
Latino	76.1	13.5	0.6	6.2	0	2.0	1.6
AA/Black	63.9	14.5	3.7	0	8.1	9.5	0.3
Education*							
≤GED	60.6	20.4	0.6	10.9	1.5	4.6	1.5
HSG to <CG	62.4	17.1	1.8	8.7	3.4	5.0	1.6
≥CG	76.7	4.6	1.4	2.8	5.8	7.2	1.6
Poverty*							
<100% FPL	37.1	34.3	2.6	18.2	0.4	6.8	0.7
100%–199% FPL	72.5	11.5	0.4	8.4	1.0	4.0	2.2
≥200 FPL	69.0	13.2	2.1	2.4	5.7	5.9	1.7
Smoking frequency*							
Nondaily	73.2	10.9	2.2	8.9	1.8	2.0	1.0
Daily	58.9	18.2	1.0	7.1	4.9	8.0	2.1
Average cigarettes per day*							
≤15	66.4	13.8	1.7	9.2	2.5	4.9	1.6
>15	58.9	21.3	0.6	1.1	8.7	7.9	1.5
Confidence in ability to quit*							
Very sure	76.5	9.5	1.0	5.5	2.3	4.7	0.5
All others	48.9	22.9	2.2	11.4	5.2	6.3	3.2
Ever called a quitline*							
No	67.0	13.7	1.3	8.1	2.9	5.4	1.7
Yes	40.0	32.7	3.9	5.5	12.3	5.2	0.5
Time to first morning cigarette*							
>30 min	68.6	13.2	1.2	7.6	1.2	6.4	1.9
≤30 min	46.1	25.1	0.8	6.5	9.7	10.1	1.7

Note. CG = college graduation; FPL = federal poverty level; GED = general equivalency diploma; HSG = high school graduation; NRT = nicotine replacement therapy.

*Sex, sexual orientation, mental health limitation/diagnosis, presence of smoking home rule against smoking, insurance status, rurality, or number of quit attempts not statistically significant.

**p* < .05.

as likely never to have used NRT (the quitline's provision of free NRT is also a factor). In most studies, a large majority of smokers who plan to quit expect to do so cold turkey. Similarly, a German study on various forms of smoking cessation assistance (NRT, bupropion, self-help materials, smoking cessation courses, acupuncture, or hypnosis) found the main reason for not using any of these forms of assistance was a perception of being able to quit on one's own or the idea that help is not needed (Gross et al., 2008). In this context, deep-rooted cultural values such as independence and self-reliance may mediate attitudes toward cessation assistance, a possibility that deserves further research as well.

Belief that NRT is ineffective has been documented by others (Cummings et al., 2004; Hughes et al., 2009; Vogt et al., 2008) as well as this study, and this belief may deserve more research attention, especially since the NRT aphorism is at best a glass 10%–15% full versus 85%–90% empty. The

senior author has found in practice that more smokers focus on the high probability of relapse after a quit attempt under any method than on the increased possibility of success attributable to use of NRT. Communications research should seek improved ways to focus prospective quitters on the improved odds of success with NRT while normalizing the necessity of repeated quit attempts. Guidelines provided by Kozlowski and colleagues (2007) may be useful to educate smokers about effectiveness of NRT and to help reframe its use as other than a sign of weakness.

Reasons for NRT nonuse varied among population segments and by smoking level. Hispanics had the highest rate of nonuse, with 91% of quit attempters having never tried NRT, similar to previous reports (Cummings et al., 1997; Levinson et al., 2004; Zhu et al., 2000). Colorado Hispanic smokers are more likely to make a quit attempt than Whites but less likely to quit successfully (Burns & Levinson, 2009), possibly due in part to

Table 4. Odds Ratio (CI) for Intention to Use NRT in Next Quit Attempt, Colorado Adult Smokers Who Never Previously Used NRT ($n = 450$)

	Bivariate models	Multivariate model
Reason for not using NRT		
Cost	0.3 (0.1–0.8)*	0.3 (0.1–<1.0)*
Willpower/ no need for NRT	0.1 (0.0–0.2)*	0.1 (0.0–0.3)*
Any other response	Reference	Reference
Poverty		
<100 FPL	4.8 (1.2–19.1)*	3.8 (0.9–16.0)
100%–199% FPL	0.3 (0.1–1.1)	0.2 (0.1–0.9)*
200% + FPL	Reference	Reference
Education		
≤GED	6.4 (1.7–24.6)*	5.9 (>1.0–33.4)*
HSG/some college/other post-HSG	3.0 (0.9–9.9)	2.2 (0.6–8.5)
≥College graduation	Reference	Reference
Ever called a quitline		
Yes	4.7 (1.1–21.1)*	
No	Reference	
Age, years		
≥45	<1.0 (0.4–2.3)	
18–44	Reference	
Sex		
Female	1.2 (0.4–3.4)	
Male	Reference	
Ethnicity		
Hispanic	0.7 (0.2–2.4)	
Black/African American	2.6 (0.5–14.3)	
White	Reference	
Insurance		
Private	0.8 (0.2–2.7)	
Medicare/Medicaid	1.6 (0.4–6.6)	
Uninsured	Reference	
Average cigarettes per day		
≤15	0.4 (0.1–1.6)	
>15	Reference	
Confidence in ability to quit		
Very sure	0.6 (0.2–1.7)	
All others	Reference	

Note. CG = college graduation; CI = confidence interval; FPL = federal poverty level; GED: general equivalency diploma; HSG: high school graduation; NRT = nicotine replacement therapy.

All bivariately significant variables were added to the multivariate model. Only variables with a $p < .05$ were retained in the final model, which is included in the second column.

* $p < .05$.

low rates of NRT use. The current finding that more than one third of Colorado Hispanic smokers cite willpower alone as the reason for NRT nonuse confirms previous qualitative findings (Levinson, Borrayo, Espinoza, Flores, & Perez-Stable, 2006) and indicates a larger Anglo-Latino disparity than was found using a Colorado sample from Hispanic surname lists (Zinser, Pampel, & Flores, 2011). At a state population level, belief in willpower (*voluntad propia* in Spanish) was roughly twice as common among Hispanics as among Whites and three times as common among Hispanics as among Black/African American respondents. This barrier is particularly important to address among Colorado Hispanic smokers; further research is needed to determine whether the disparity is also seen among Hispanic smokers elsewhere.

In contrast to other studies (Cummings et al., 1997; Fu et al., 2008; Zhu et al., 2000), this study found previous NRT use more widespread among Black/African American smokers than White smokers, but also higher rates among Black/

African American smokers of not knowing how and where to get NRT and doubt about NRT effectiveness. A simple targeted awareness campaign might assist this population in Colorado, where free NRT is available through the state quitline. Indeed, individuals who had ever called the quitline had the lowest rate of NRT never-use (42.4%) and a high rate of intention to use NRT in the next quit attempt (32.7%).

In general, previous NRT nonuse was associated with indicators of lower dependence, such as longer time to first morning cigarette, high confidence in ability to quit, and nondaily smoking. These findings are consistent with Shiffman et al. (2005), and the benefit of NRT among lighter smokers has been questioned (Fiore et al., 2008) although the nature of light smoking may be changing as smokers increasingly reduce consumption rather than quitting.

Although previous research has found widespread concern about NRT side effects and beliefs that NRT is dangerous or addictive (Cummings et al., 2004; Etter & Perneger, 2001;

Shiffman, Ferguson, 2008), our study found relatively low rates of these concerns as reasons for not using NRT. The differences may reflect study focus differences: Previous studies focused on attitudes or knowledge about NRT, while this study focused directly on reasons for not using NRT; while many smokers may doubt NRT safety or fear side effects, those concerns may not be the most salient reasons inhibiting NRT use.

Some authors have criticized an overemphasis in research on pharmaceutically assisted cessation, which they say stems from societal biases (interventionism, medicalization, commodification) and highlights favorable results of pharmaceutical industry-sponsored research rather than population studies. The result is said to be the creation of a population of disempowered smokers who feel they shouldn't even consider an unaided quit attempt (Chapman & MacKenzie, 2010). Our findings do not seem to support these concerns, since a large majority of Colorado smokers still say they intend to quit unaided ("cold turkey"). According to the National Health Interview Survey (NHIS), rates of pharmaceutically aided quit attempts have increased from 21.7% in 2000 to 30.0% in 2010 (Centers for Disease Control and Prevention, 2011; Cokkinides et al., 2005). From 2001 to 2010, the overall proportion of U.S. smokers across all age groups who made a recent quit attempt remained relatively stable or increased (Centers for Disease Control and Prevention, 2011). While it is true that the proportion of aided quit attempts has increased, the large majority of smokers continue to make an unaided attempt. These data tend to support the idea that current smokers continue to feel quite capable of making a quit attempt, aided or otherwise, which is significant from a public health perspective.

Several limitations apply to the findings. First, the results are based on Colorado smokers in 2008; reasons for NRT nonuse may well vary geographically and temporally, especially if they are potentially responsive to information campaigns. Second, the reasons for NRT nonuse were self-reported, and respondents may or may not "know their own minds" in explaining their past NRT behavior. Third, the survey design did not allow for follow-up questions; further qualitative research could help give meaning to the common reasons for NRT nonuse, especially belief in willpower. The results are limited by lack of information about survey nonrespondents, which is a common problem in random-digit-dialed surveys, increasingly so as response rates have fallen. The analyses used data that were weighted to match the Colorado population on age, sex, and racial/ethnic distributions. This widely used approach reduces the influence of nonresponse rates that may differ by these demographic factors, but the possibility remains that nonrespondents might be systematically different from respondents in unknown ways that could affect the reported results. Finally, the cross-sectional survey design precluded information about future NRT use after the interview date; analysis used an intermediate outcome—intention—which generally has significance as a predictor of future health behavior (Burkhalter, Warren, Shuk, Primavera, & Ostroff, 2009).

In summary, this study among a general population of smokers identified main reasons for not using NRT, all of which are misperceptions that can readily be targeted by public health campaigns: belief that willpower alone is sufficient for quitting, that NRT is ineffective, and that it is too costly (despite availability of free NRT through a state quitline). The balance

of reasons as NRT barriers varied in this population among population groups, with faith in willpower most prevalent among Hispanics and doubts of effectiveness most prevalent among Blacks/African Americans. Similar surveillance studies should be considered a precursor to population-level initiatives to increase use of evidence-based treatments for smoking cessation.

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DECLARATION OF INTERESTS

None declared.

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