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Tobacco Quitlines Need to Assess and Intervene with Callers' Hazardous Drinking

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Abstract

Background—Based on published data showing that daily smokers have high rates of hazardous drinking and higher rates of smoking relapse, we hypothesized that New York State Smokers' Quitline (NYSSQL) callers would exhibit elevated rates of risky drinking and risky drinking callers would report lower rates of smoking cessation.

Methods—We assessed rates of hazardous drinking among 88,479 callers to the NYSSQL using modified NIAAA guidelines. Using 2 routine NYSSQL short-term follow-up interviews (n=14,123 & n=24,579) and a 3-month follow-up interview (n=2,833), we also compared smoking cessation rates for callers who met criteria for hazardous drinking compared to moderate drinkers and non-drinkers.

Results—At baseline, 56% of callers reported drinking, and 23% reported hazardous drinking using modified NIAAA guidelines. Hazardous drinkers did not differ on measures of smoking cessation outcomes compared to non-drinkers but did have lower smoking cessation rates compared to persons who reported moderate alcohol consumption for the enhanced services program 1-week follow-up [adjusted OR (95% CI)=1.09 (1.01, 1.17), p=0.04] and the standard 2-week follow-up [adjusted OR (95% CI)=1.17 (1.07, 1.29), p=0.001].

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The corresponding author had full access to all data in this study and had final responsibility for the decision to submit the paper for publication.

Potential conflicts of interest:

Dr. O'Malley received honoraria as a member of workgroup on medications development for alcoholism sponsored by the American College of Neuropsychopharmacology and received travel reimbursement for talks at the Controlled Release Society, the Drug Information Association, and the Association for Medical Education and Research in Substance Abuse. She has consulted to the University of Chicago on studies of naltrexone for smoking cessation. She is a partner in Applied Behavioral Research, and she is a Scientific Panel Member, Butler Center for Research at Hazelden.

Conclusions—Nearly a quarter of smokers calling the NYSSQL reported a hazardous drinking pattern which was associated with lower cessation outcomes compared to those who reported a moderate drinking profile. Given the large number of high risk drinkers who can be identified through a quitline, tobacco quitlines may provide a venue for providing brief alcohol interventions to these high risk drinkers. Future studies should evaluate whether a brief alcohol intervention would result in improved smoking cessation rates for hazardous drinking smokers.

Keywords

Hazardous drinking; smoking; tobacco; NIAAA; quitline

Background

Smoking cessation quitlines are a cost-effective way to reach a large number of smokers with cessation advice (Stead et al., 2006). Quitlines provide smoking cessation counseling in most European countries, parts of Asia, Australia, Canada, and all 50 of the United States (US) (Abdullah et al., 2004; Anderson and Zhu, 2007; Borland et al., 2003; Centers for Disease Control (CDC), 2007; Gilbert and Sutton, 2006). In many areas of the US, access to free or reduced cost stop smoking medications is also available (Cummins et al., 2007). However, few quitlines routinely screen and counsel callers regarding alcohol use despite numerous studies that have shown a strong link between drinking and smoking behaviors (Ellingstad et al., 1999; Gulliver et al., 1995). Based on US data from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC), daily smokers report high levels of hazardous drinking (43.4%) (McKee et al., 2007), which is associated with increased risk for alcohol use disorders, nicotine dependence, liver disease, and divorce/separation (Dawson et al., 2008).

Abuse of alcohol decreases the likelihood that smokers will quit smoking cigarettes in their lifetime (Hughes and Kalman, 2006). Indeed, data from both epidemiological studies and clinical trials have shown that heavier drinkers are at higher risk of smoking cessation failure than individuals who consume lower amounts of alcohol (Agudo et al., 2004; Dawson, 2000; McClure et al., 2002). Data from two longitudinal surveys reveal a curvilinear relationship in which moderate drinkers have better smoking cessation outcomes than both non-drinkers and hazardous drinkers (Kahler et al., 2009; Kahler et al., 2008b). Consistent with these findings, data from a recent smoking cessation clinical trial found that moderate drinkers have the best outcomes (ie, better than both hazardous drinkers and non-drinkers) (Leeman et al., 2008).

Several studies have tested the effect of limiting or eliminating alcohol consumption in conjunction with smoking quit attempts, in hopes of producing larger long-term smoking cessation rates. Results of these studies have been equivocal and have varied depending on the severity of the alcohol or nicotine dependence, the amount of time elapsed between treatments, and the treatment setting. In a meta-analysis of 19 randomized controlled studies of smoking cessation success among patients currently being treated for alcohol or substance abuse, Prochaska and colleagues determined that sample selectivity may account for the equivocal findings (Prochaska et al., 2004). Alcohol abstinence was the main objective of these studies, as most sample populations consisted of subjects in current alcohol inpatient treatment (Joseph et al., 2004; Prochaska et al., 2004).

A recent study addressed the unanswered question of whether adding an alcohol intervention to smoking cessation treatment would improve smoking quit rates (Kahler et al., 2008a). In this study of smokers who met National Institute on Alcohol Abuse and Alcoholism (NIAAA) criteria for hazardous drinking, the addition of a brief alcohol intervention to a

standard smoking cessation treatment produced superior smoking cessation rates to standard treatment of equal intensity that did not address alcohol across follow-ups over 26 weeks [adjusted OR=1.56 (CI: 1.01, 2.43)]. Thus, these new data provide preliminary evidence that adding an alcohol intervention to standard smoking cessation treatment can improve quit rates.

Despite the importance of alcohol use to smoking cessation, we are unaware of any studies that have systematically assessed alcohol use among smokers seeking assistance to quit by contacting a tobacco cessation quitline. Given the preliminary nature of the extant studies conducted to date (Kahler et al., 2008a; Leeman et al., 2008) and the importance of replication in science (Durand and Barlow, 2006), we endeavored to conduct an initial examination of hazardous alcohol use among New York State Smokers' Quitline (NYSSQL) callers and relationships between smoking and drinking variables. Specifically, the primary goal of this study was to assess the prevalence of hazardous drinking among callers to the NYSSQL. A secondary goal was to examine whether non-drinkers, moderate drinkers, and hazardous drinkers differed on baseline demographic and smoking variables and on smoking cessation measured at 1 to 2 weeks and 3 months after the intake call. No research to date has examined alcohol use as a predictor of response to quitline calls. Based on recent evidence, we expected moderate drinkers to report the best smoking cessation outcomes (Kahler et al., 2009; Kahler et al., 2008b; Leeman et al., 2008).

Methods

Data Source

This study was implemented in the context of the population based intervention delivered by the NYSSQL between May 2008 and October 2009. Staffed by trained telephone cessation coaches and accessed by calling a toll-free number (1-866-NYQUITS), the NYSSQL provides evidence based support to smokers and their family and friends (Cummings et al., 2006; Miller et al., 2005). During the baseline interview, callers who choose to speak with a telephone cessation coach receive behavioral counseling and a free stop smoking guide. Callers who meet medical eligibility criteria can also receive a free, 2-week supply of nicotine medications (either patches, lozenges, or gum). All clinical protocols in effect for the NYSSQL are approved by the NY State Department of Health, and the follow-up survey is approved on an ongoing basis by the Roswell Park Cancer Institute Institutional Review Board (IRB). Given that alcohol use is a well known trigger for smoking and a tobacco relapse precipitant (Ellingstad et al., 1999; Gulliver et al., 1995; McKee et al., 2007), assessment and discussion of alcohol use was deemed appropriate as part of the routine smoking cessation service of the NYSSQL.

1- and 2-Week Follow-up Interviews

As part of the standard service, the NYSSQL coaches attempt to follow up with all callers who are mailed nicotine medications at 10 to 14 days after the baseline interview (hereafter referred to as the "standard 2-week follow-up"). The response rate for the standard 2-week follow-up was 43.9% (14,123 completed interviews/32,206 attempted interviews). At the time this study was conducted, uninsured callers were also eligible to receive an enhanced services program (ESP) including 4 additional counseling calls and 6 additional weeks of nicotine replacement therapy (NRT). The first call back for these callers occurred approximately 5 to 7 days after the intake call (hereafter referred to as the "ESP 1-week follow-up"), and also included the same follow-up questions included within the standard 2-week follow-up interview. The response rate for the ESP 1-week follow-up was 60.9% (24,579 completed interviews/40,334 attempted interviews).

3-Month Follow-up Interview

The 3-month follow-up interview consists of a rolling telephone survey with a sample of 8 smokers randomly selected weekly who were uninsured or carried Medicaid insurance and 16 smokers randomly chosen weekly who were insured smokers (ie, a total of 24 smokers were randomly selected per week). As part of the NYSSQL intake interview, 96.4% of callers agreed to be contacted in the future to check how they are doing and to discuss NYSSQL services. The 3-month follow-up survey was restricted to this subsample and residents of New York State who were current adult (18+ years) smokers seeking cessation assistance for themselves. The response rate for this follow-up was 50.5% (2,833 completed interviews/5,609 attempted interviews).

Assessment of Hazardous Drinking and Smoking Variables

The Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) was implemented as part of the NYSSQL's baseline interview beginning on May 13, 2008 (Reinert and Allen, 2007). The 3 items contained in the AUDIT-C are listed below. In responding to these 3 questions, callers are told to consider a "drink" to be a 12-oz can or bottle of beer, a 5-oz glass of wine, a wine cooler, 1 cocktail, or a (1.5 oz) shot of hard liquor (like gin or vodka): 1) How often have you had a drink containing alcohol in the last year? Response options are: Never (0 points), Monthly or less (1 point), 2 to 4 times a month (2 points), 2 to 3 times a week (3 points), 4 to 5 days a week (4 points), or 6 or more days a week (4 points); 2) How many drinks containing alcohol did you have on a typical day when you were drinking in the last year? Response options are: I do not drink (0 points), 1 to 2 drinks (0 points), 3 to 4 drinks (1 point), 5 to 6 drinks (2 points), 7 to 9 drinks (3 points), or 10 or more drinks (4 points); 3) How often in the last year have you had 6 or more drinks on 1 occasion? Response options are: Never (0 points), Less than monthly (1 point), Monthly (2 points), Weekly (3 points), Daily or almost daily (4 points) (Bradley et al., 2003).

We calculated rates of risky drinking based on a modified version of the NIAAA guidelines (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2005) by calculating proxy thresholds using AUDIT-C data. Specifically, males who reported at least one instance of drinking: a) 5 to 6 drinks, or b) 3 to 4 drinks on 4 to 5 days per week, and females who reported at least one instance of drinking: a) 3 to 4 drinks, or b) 1 to 2 drinks on 4 to 5 days per week were coded as hazardous drinkers. Moderate drinkers reported consuming alcohol at least once but did not violate these thresholds.

Demographic and smoking variables were gathered as part of the standard baseline interview conducted by the NYSSQL. We also computed the Heaviness of Smoking Index (HSI), which is the sum of the following 2 items: How soon after you wake do you usually smoke your first cigarette? Response options are: Within 5 minutes (3 points), 6–30 minutes (2 points), 31–60 minutes (1 point), or After 60 minutes (0 points); How much do you smoke per day? Response options are: 10 or less (0 points), 11–20, (1 point), 21–30 (2 points), 31 or more (3 points). This scale has been shown to be a good index of nicotine dependence (Heatherton et al., 1989; Transdisciplinary Tobacco Use Research Center (TTURC) Tobacco Dependence Phenotype Workgroup, 2007). At both the standard 2-week and ESP 1-week follow-up interviews, we assessed initial smoking cessation with the item: Have you stopped smoking yet? Response options: Yes or No. At the 3-month interview, we assessed 7-day point prevalence abstinence from smoking with the item: Have you smoked a cigarette, even a puff, in the last 7 days? Response options: Yes or No.

Statistical Analysis

Rates of hazardous drinking were expressed as proportions. Differences in demographic and smoking variables between the different categories of drinker (non-drinkers, moderate

drinkers, and hazardous drinkers) were analyzed using chi-square tests for categorical variables and 1-way ANOVA for continuous variables. Differences in smoking cessation rates for both types of 2-week follow-ups and the 3 month follow-up were analyzed using logistic regression with hazardous drinkers (defined by the modified NIAAA guidelines) as the reference category compared to moderate drinkers and non-drinkers. This was conducted first without any adjustment for baseline variables, then baseline variables [age, sex (female vs male), race (white vs all others), number of cigarettes smoked per day, number of years smoking cigarettes] were added as an initial block followed by the drinking variable, and again hazardous drinkers (defined by the modified NIAAA guidelines) were the reference category compared to moderate drinkers and non-drinkers. For logistic regression analyses predicting smoking cessation rates we only present data for hazardous drinking as defined by the modified NIAAA guidelines, to be consistent with other published research showing an effect of hazardous drinking on smoking cessation (Kahler et al., 2009; Leeman et al., 2008).

Results

Characteristics of Callers

The flow of callers from the baseline interview to the 3 different follow-up interviews is presented in Figure 1. The sample (N = 88,479; 53.2% female) was primarily Caucasian (65.3%) with a mean age of 42.71 (SD = 13.73). Callers smoked an average of 20.41 (SD = 25.18) cigarettes per day, had smoked an average of 22.61 (SD = 13.44) years, and had a mean HSI score of 1.95 (SD = 1.09).

Rates of Hazardous Drinking

As presented in Figure 2, 55.8% (49,403/88,479) of callers reported drinking at baseline, and 22.9% (20,222/88,479) reported hazardous drinking by the modified NIAAA guidelines. The rate of moderate drinking by the modified NIAAA guidelines was 33.0% (29,169/88,479).

Differences in Demographic Variables

Differences in demographic and smoking characteristics of the sample broken down by type of alcohol use categorization are shown in Table 1. The groups differed on all of these variables.

Rates of Smoking Cessation by Modified NIAAA Guidelines

Rates of smoking cessation at the standard 2-week follow-up were: 55.8% (3,316/5,942) for non-drinkers, 60.2% (3,170/5,267) for moderate drinkers, and 56.2% (1,638/2,914) for hazardous drinkers. For the ESP 1-week follow-up these rates were: 63.0% (7,423/11,777) for non-drinkers, 66.5% (4,885/7,342) for moderate drinkers, and 64.1% (3,501/5,460) for hazardous drinkers. Rates for the 3-month follow-up were: 28.3% (336/1,186) for non-drinkers, 32.2% (322/1,000) for moderate drinkers, and 26.9% (174/647) for hazardous drinkers.

Logistic regression analyses predicting smoking cessation with and without adjustment for baseline demographic and smoking variables are displayed in Table 2. Hazardous drinkers had significantly different quit rates as compared with moderate drinkers for the standard 2-week follow-up [adjusted OR (95% CI)=1.17 (1.07, 1.29), p=0.001] and the ESP 1-week follow-up [adjusted OR (95% CI)=1.09 (1.01, 1.17), p=0.04]. Quit rates were not significantly different from moderate drinkers at the 3-month follow-up [adjusted OR (95% CI)=1.23 (0.98, 1.55), p=0.07]. Hazardous drinkers did not differ from non-drinkers on any smoking cessation outcomes.

Discussion

Nearly a quarter of callers to the NYSSQL were found to be drinking at hazardous levels. Hazardous drinking patterns were observed more often among those who were younger, female and in those who reported smoking fewer cigarettes per day for fewer years. These smokers also displayed a lower rate of nicotine dependence, as measured using the HSI. The rate of hazardous drinking defined using modified NIAAA criteria (22.9%) was approximately half the rate of NIAAA defined hazardous drinking (43.4%) among smokers in an epidemiological study (ie, the NESARC study) conducted in the US (McKee et al., 2007). One possible explanation is that the NESARC study includes a broad sample of smokers, including those who do not desire smoking cessation treatment. Given evidence that heavy drinkers are less likely to attempt to quit smoking (Zimmerman et al., 1990), perhaps fewer hazardous drinking smokers call the NYSSQL. Use of the AUDIT-C categories for ascertaining drinkers' quantity and frequency may also have contributed. Nonetheless, a substantial proportion of quitline callers are hazardous drinkers.

Working within the confines of the NYSSQL's state service, we calculated rates of quitting using a basic definition of smoking cessation (Have you quit smoking yet? Yes/No) at a 1- to 2-week follow-up and the standard definition of 7-day point prevalence abstinence at a 3-month follow-up (Fiore et al., 2008; Miller et al., 2005). Consistent with other large quitline studies, abstinence from smoking was measured by self-report (An et al., 2006; Hollis et al., 2007; Miller et al., 2005). Differences were found between hazardous and moderate drinkers using the modified NIAAA guidelines (range 2.4% to 5.3% difference). Significant differences were found between the groups for all types of follow-up with unadjusted ORs. When adjusting for baseline demographic and smoking variables, ORs remained significantly different for the ESP 1-week and standard 2-week follow-ups but not for the 3-month follow-up ($p=0.07$).

Consistent with our previous research, hazardous drinkers and non-drinkers had lower rates of smoking cessation as compared to moderate drinkers, who appeared to have the best outcomes (Leeman et al., 2008). These findings are in accordance with previous research showing that heavier drinkers are more likely to fail at smoking cessation (Agudo et al., 2004; Dawson, 2000; McClure et al., 2002), and research showing that moderate drinkers tend to have better outcomes than non-drinkers and hazardous drinkers (Kahler et al., 2009; Kahler et al., 2008b). The results of this study extend these relationships to hazardous drinkers calling a tobacco quitline for assistance with smoking cessation. Long-term rates of smoking cessation are low (Etter and Stapleton, 2006). Given that heavy drinking appears to reduce smoking cessation success, addressing alcohol consumption could potentially improve quit rates for hazardous drinkers. The reasons for relapse for non-drinkers may be different. Of note, this study was not designed to test reasons why moderate drinkers would have a better rate of smoking cessation than hazardous drinkers and non-drinkers, and that is a limitation of the present study that should be examined in future studies comparing rates of smoking cessation among non-drinkers, moderate drinkers, and hazardous drinkers.

Our experience revealed that brief alcohol screening was relatively easy to implement in the context of a state quitline and yielded important clinical information. Given the ability of quitlines, such as the NYSSQL, to reach large numbers of smokers who drink heavily, the potential exists to extend the services of stop smoking quitlines to address high risk drinking behavior (Cummings and Celestino, 2008). Given emerging evidence that adding a brief alcohol intervention to standard smoking cessation treatment can improve quit rates (Kahler et al., 2008a) and the fact that state quitlines have the potential to reach millions of smokers annually (Centers for Disease Control (CDC), 2007), testing the effectiveness of a brief alcohol intervention delivered through a quitline on both cessation of tobacco use and

drinking behavior would seem worthwhile. While increasing rates of smoking cessation through a reduction of callers' hazardous drinking would be ideal, even if such an intervention reduced hazardous drinking only, the benefit to public health may still be substantial. Indeed, there is growing interest in delivering alcohol interventions through state sponsored tobacco quitlines (Lichtenstein et al., 2010).

In summary, a large proportion of individuals calling the NYSSQL for help with smoking cessation drink at hazardous levels. These callers appear to be a younger group of smokers composed of a higher proportion of females who have smoked for fewer years and smoke fewer cigarettes per day. Smoking cessation rates for these hazardous drinkers are lower than those of moderate drinkers and not different from non-drinkers. The potential to deliver a brief alcohol intervention to hazardous drinkers calling telephone quitlines represents a prime opportunity to possibly improve their chance of smoking cessation success and to reduce other risks associated with alcohol consumption.

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References

- Abdullah A, Lam T-H, Chan S, Hedley A. Which smokers use the smoking cessation Quitline in Hong Kong, and how effective is the Quitline? *Tobacco Control*. 2004; 13:415–421. [PubMed: 15564628]
- Agudo A, Pera G, Rodriguez M, Quiros J, Navarro C, Martinez C, et al. Changes in smoking habits in adults: Results from a prospective study in Spain. *Annals of Epidemiology*. 2004; 14:235–243. [PubMed: 15066602]
- An L, Schillo B, Kavanaugh A, Lachter R, Luxenberg M, Wendling A, Joseph A. Increased reach and effectiveness of a statewide tobacco quitline after the addition of access to free nicotine replacement therapy. *Tobacco Control*. 2006; 15:286–293. [PubMed: 16885577]
- Anderson C, Zhu S-H. Tobacco quitlines: Looking back and looking ahead. *Tobacco Control*. 2007; 16(Suppl 1):i81–i86. [PubMed: 18048638]
- Borland R, Balmford J, Segan C, Livingston P, Owen N. The effectiveness of personalized smoking cessation strategies for callers to a Quitline service. *Addiction*. 2003; 98:837–846. [PubMed: 12780372]
- Bradley K, Bush K, Epler A, Dobie D, Davis T, Sporleder J, Maynard C, Burman M, Kivlahan D. Two brief alcohol-screening tests from the Alcohol Use Disorders Identification Test (AUDIT). *Archives of Internal Medicine*. 2003; 163:821–829. [PubMed: 12695273]
- Centers for Disease Control (CDC). *Best Practices for Comprehensive Tobacco Control Programs*. Atlanta: USDHHS; 2007.
- Cummings, K.; Celestino, P. *New York State Smokers' Quitline Annual Report*. Buffalo, NY: Roswell Park Cancer Institute; 2008.
- Cummings K, Hyland A, Fix B, Bauer U, Celestino P, Carlin-Menter S, Miller N, Frieden T. Free nicotine patch give away program: 12 month follow-up of participants. *American Journal Of Preventive Medicine*. 2006; 31:181–184. [PubMed: 16829336]

- Cummins S, Bailey L, Campbell S, Koon-Kirby C, Zhu S-H. Tobacco cessation quitlines in North America: A descriptive study. *Tobacco Control*. 2007; 16(Supplement I):i9–i15. [PubMed: 18048639]
- Dawson D. Drinking as a risk factor for sustained smoking. *Drug & Alcohol Dependence*. 2000; 59:235–249. [PubMed: 10812284]
- Dawson D, Li T-K, Grant B. A prospective study of risk drinking: At risk for what? *Drug & Alcohol Dependence*. 2008; 95:62–72. [PubMed: 18243584]
- Durand, V.; Barlow, D. *Essentials of Abnormal Psychology*. 4th Edition. Belmont, CA: Thomson Wadsworth; 2006.
- Ellingstad T, Sobell L, Sobell M, Cleland P, Agrawal S. Alcohol abusers who want to quit smoking: Implications for clinical treatment. *Drug and Alcohol Dependence*. 1999; 54:259–264. [PubMed: 10372799]
- Etter J, Stapleton J. Nicotine replacement therapy for long-term smoking cessation: a meta-analysis. *Tobacco Control*. 2006; 15:280–285. [PubMed: 16885576]
- Fiore, M.; Jaén, C.; Baker, T.; Bailey, W.; Benowitz, N.; Curry, S.; Dorfman, S.; Froelicher, E.; Goldstein, M.; Heaton, C.; Henderson, P.; Heyman, R.; Koh, H.; Kottke, T.; Lando, H.; Meckleberg, R.; Mermelstein, R.; Mullen, P.; Orleans, T.; Robinson, L.; Stitzer, M.; Tommasello, A.; Villejo, L.; Wewers, M. *Treating Tobacco Use and Dependence 2008 Update: Clinical Practice Guideline*. Rockville, MD: USDHHS; 2008.
- Gilbert H, Sutton S. Evaluating the effectiveness of proactive telephone counselling for smoking cessation in a randomized controlled trial. *Addiction*. 2006; 101:590–598. [PubMed: 16548938]
- Gulliver S, Rohsenow D, Colby S, Dey A, Abrams D, Niaura R, Monti P. Interrelationship of smoking and alcohol dependence. *Journal of Studies on Alcohol*. 1995; 56:202–206. [PubMed: 7760567]
- Heatherton T, Kozlowski L, Frecker R, Rickert W, Robinson J. Measuring the heaviness of smoking using self-reported time to first cigarette of the day and number of cigarettes smoked per day. *British Journal of Addiction*. 1989; 86:1119–1127. [PubMed: 1932883]
- Hollis J, McAfee T, Fellows J, Zbikowski S, Stark M, Riedlinger K. The effectiveness and cost effectiveness of telephone counseling and the nicotine patch in a state tobacco quitline. *Tobacco Control*. 2007; 16:i53–i59. [PubMed: 18048633]
- Hughes J, Kalman D. Do smokers with alcohol problems have more difficulty quitting? *Drug & Alcohol Dependence*. 2006; 82:91–102. [PubMed: 16188401]
- Joseph A, Willenbring M, Nugent S, Nelson D. A randomized trial of concurrent versus delayed smoking intervention for patients in alcohol dependence treatment. *Journal of Studies on Alcohol*. 2004; 65:681–691. [PubMed: 15700504]
- Kahler C, Borland R, Hyland A, McKee S, Thompson M, Cummings K. Alcohol consumption and quitting smoking in the International Tobacco Control (ITC) Four Country Survey. *Drug & Alcohol Dependence*. 2009; 100:214–220. [PubMed: 19056188]
- Kahler C, Metrik J, LaChance H, Ramsey S, Abrams D, Monti P, Brown R. Addressing heavy drinking in smoking cessation treatment: A randomized clinical trial. *Journal of Consulting & Clinical Psychology*. 2008a; 76:852–862. [PubMed: 18837602]
- Kahler C, Strong D, Papandonatos D, Colby S, Clark M, Boergers J, Niaura R, Abrams D, Buka S. Cigarette smoking and the lifetime alcohol involvement continuum. *Drug & Alcohol Dependence*. 2008b; 93:111–120. [PubMed: 17964082]
- Leeman R, McKee S, Toll B, Krishnan-Sarin S, Cooney J, Makuch R, O'Malley S. Risk factors for treatment failure in smokers: Relationship to current drinking and to lifetime history of an alcohol use disorder. *Nicotine & Tobacco Research*. 2008; 10:1793–1809. [PubMed: 19023831]
- Lichtenstein E, Zhu S-H, Tedeschi G. Smoking cessation quitlines: An underrecognized intervention success story. *American Psychologist*. 2010; 65:252–261. [PubMed: 20455619]
- McClure J, Wetter D, Moor C, Cinciipini P, Gritz E. The relation between alcohol consumption and smoking abstinence: Results from the Working Well Trial. *Addictive Behaviors*. 2002; 27:367–379. [PubMed: 12125663]
- McKee S, Falba T, O'Malley S, Sindelar J, O'Connor P. Smoking status as a clinical indicator for alcohol misuse in US adults. *Archives of Internal Medicine*. 2007; 167:716–721. [PubMed: 17420431]

- Miller N, Frieden T, Liu S, Matte T, Mostashari F, Deitcher D, et al. Effectiveness of a large-scale distribution programme of free nicotine patches: A prospective evaluation. *Lancet*. 2005; 365:1849–1854. [PubMed: 15924980]
- National Institute on Alcohol Abuse and Alcoholism (NIAAA). Helping patients who drink too much: A clinician's guide. NIH Publication No. 05-3769. Bethesda, MD: NIAAA; 2005.
- Prochaska J, Delucchi K, Hall S. A meta-analysis of smoking cessation interventions with individuals in substance abuse treatment or recovery. *Journal of Consulting & Clinical Psychology*. 2004; 72:1144–1156. [PubMed: 15612860]
- Reinert D, Allen J. The Alcohol Use Disorders Identification Test: An update of research findings. *Alcoholism: Clinical and Experimental Research*. 2007; 31:185–199.
- Stead L, Perera R, Lancaster T. Telephone counselling for smoking cessation (Review). *Cochrane Database of Systematic Reviews*. 2006 Available online:
- Transdisciplinary Tobacco Use Research Center (TTURC) Tobacco Dependence Phenotype Workgroup. Time to first cigarette in the morning smoking as an index of ability to quit smoking: Implications for nicotine dependence. *Nicotine & Tobacco Research*. 2007; 9:S555–S570. [PubMed: 18067032]
- Zimmerman R, Warheit G, Ulbrich P, Buhl Auth J. The relationship between alcohol use and attempts and success at smoking cessation. *Addictive Behaviors*. 1990; 15:197–207. [PubMed: 2378280]

Figure 1.
New York State Smokers' Quitline Callers Assessed by Interviews from May 13, 2008
through October 15, 2009.

Figure 2.
Rates of Any and Hazardous Drinking for New York State Smokers' Quitline Callers (N = 88,479).

Table 1

Demographic and Smoking Characteristics

	Non-drinker (n = 39,056)	Moderate Drinker (n = 29,167)	Hazardous Drinker (n = 20,216)	Chi- Square/F	P Value
Age (yr)	45.51±13.61	42.16±13.53	38.10±12.89	2,066.27	<0.001
Female (%)	57.7	43.2	58.9	1,754.60	<0.001
White (%)	70.9	69.8	70.7	8.21	0.01
No. of cigarettes smoked per day	21.48±26.81	19.64±28.63	19.46±14.09	63.12	<0.001
No. of years smoking cigarettes	24.97±13.82	21.72±13.18	19.34±12.17	1,302.19	<0.001
HIS	1.92±1.09	1.99±1.10	1.93±1.10	35.28	<0.001

Table 2
Logistic Regression Predicting Smoking Cessation Rates for Hazardous Drinkers, Non-Drinkers, and Moderate Drinkers

	Unadjusted			Adjusted*		
	Wald	OR (95% CI)	P Value	Wald	OR (95% CI)	P Value
ESP 1-Week Follow-up (n = 14,123)						
Hazardous Drinkers		Ref			Ref	
Non-Drinkers	1.91	0.95 (0.89, 1.02)	0.17	0.62	1.03 (0.96, 1.11)	0.43
Moderate Drinkers	8.07	1.11 (1.03, 1.20)	0.004	4.40	1.09 (1.01, 1.17)	0.04
Standard 2-Week Follow-up (n = 24,579)						
Hazardous Drinkers		Ref			Ref	
Non-Drinkers	0.13	0.98 (0.90, 1.08)	0.72	3.08	1.09 (0.99, 1.20)	0.08
Moderate Drinkers	12.22	1.18 (1.07, 1.29)	<0.001	10.63	1.17 (1.07, 1.29)	0.001
3-Month Follow-up (n = 2,833)						
Hazardous Drinkers		Ref			Ref	
Non-Drinkers	0.43	1.08 (0.87, 1.33)	0.51	0.67	1.10 (0.88, 1.38)	0.41
Moderate Drinkers	5.25	1.29 (1.04, 1.61)	0.02	3.22	1.23 (0.98, 1.55)	0.07

* Adjusted for age, sex (female vs male), race (white vs all others), number of cigarettes smoked per day, number of years smoking cigarettes

Ref=Reference category

Hazardous drinking defined using a modified form of the NIAAA guidelines in which males who reported at least one instance of drinking: a) 5 to 6 drinks, or b) 3 to 4 drinks on 4 to 5 days per week, and females who reported at least one instance of drinking: a) 3 to 4 drinks, or b) 1 to 2 drinks on 4 to 5 days per week were coded as hazardous drinkers. Moderate drinkers reported consuming alcohol at least once but did not violate these thresholds.