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Medical and Mental Health Status Among Drug Dependent Patients Participating in a Smoking Cessation Treatment Study

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Abstract

Substance Abusers have a large number of medical and psychiatric problems, and 70–90% are smokers. The aim of this analysis was to examine the prevalence and correlates of medical and psychiatric problems in this sample of drug dependent patients who were participants in a multi-site study of smoking cessation interventions while engaged in substance abuse treatment. Descriptive analyses showed at baseline, 72.8% of participants had at least one medical problem and 64.1% had at least one psychiatric diagnosis. Medical problems correlated strongly with age, smoking severity, and pack-years; Psychiatric problems correlated with gender and ethnicity. Smoking cessation treatment was associated with a moderate reduction in the ASI Medical composite score. More research is needed on the possible effects of combined treatment of substance abuse and concurrent medical and psychiatric problems. Offering smoking cessation in conjunction with primary care may be a way to address the health needs of this population.

Introduction

In 2005, the National Institute on Drug Abuse (NIDA), Clinical Trials Network (CTN) completed a multi-site clinical trial looking at smoking cessation interventions in substance abuse treatment programs (Reid et al, 2007a,b). Though the treatment study achieved modest results, the clinic staff conducting the trial began to see a unique opportunity this trial presented in increasing participants' exposure to medical care and addressing various health problems that are endemic to the substance abusing population. The impact of addiction on various body systems is well known. The effects of alcohol on the liver (Diehl, 1998) and the brain (e.g. Wernicke-Korsakov syndrome), stimulant and opioid use on the brain (NIDA, 2008), and tobacco on the respiratory and cardiovascular systems (CDC, 2003), have been well documented. The complex health needs of substance users with HIV and tuberculosis, has also been well documented (Hermann & Gourevitch, 1997), as well as the increase number of ER visits and hospitalizations among this population (Byrne et al., 2003; Freidmann, Zhang, Henrickson, Stein & Gerstein, 2003). The health effects, however, of living a chronic lifestyle of addiction, without regular access to primary care, is less well documented. Several recent studies discuss the broader health issues faced by substance abusers (DeAlba, Samet, & Saitz, 2004; Druss & von Esenwein, 2006; Friedmann et al., 2006) and their access to primary medical care. A clear picture of the broader health care needs of substance abusers and how to address these as part of their substance abuse treatment is lacking in the current literature. Features of the lifestyle of chronic drug

dependence that would be expected to adversely impact health would include poor self-care (e.g. poor nutrition, poor general hygiene, poor dental hygiene, poor sleep hygiene), exposure to trauma (both psychological and physical), and failure to access health care. Chronic stress and intermittent trauma typical of the addict lifestyle are also likely to promote psychiatric problems, including depression and anxiety, both through direct effects (e.g. depression is now an established risk factor for coronary vascular disease; Williams & Steptoe, 2007) and by interfering with self-care. Those with addictions tend to seek medical or psychiatric treatment primarily in crisis situations (Byrne et al, 2003), when health care providers can focus only on the emergent medical issues, and not other less urgent health needs.

In order to better present the medical and mental health problems experienced by persons in substance abuse treatment, we performed a secondary analysis of medical and psychiatric health status and health outcomes among patients in treatment for drug dependence who enrolled in a clinical trial of a smoking cessation intervention. The parent study was sponsored by the National Institute on Drug Abuse (NIDA) Clinical Trials Network (CTN). This was a randomized controlled trial of a smoking cessation intervention (SC), nicotine replacement therapy (NicoDerm CQ®) plus group cognitive behavioral counseling (Munoz, Organista, & Hall, 1988; Hall, Munoz, & Reus, 1994; Patten, Martin, Myers, Calfas, & Williams, 1998) compared to treatment-as-usual (TAU), and conducted across multiple community-based outpatient substance abuse treatment programs. Health status was evaluated at baseline and during the trial, and participants were monitored regularly by a primary care practitioner (mainly physicians) at the treatment programs.

It was hypothesized that medical and psychiatric problems would increase with age, clinical severity (severity of substance abuse, psychiatric and medical problems) and pack-years (the average number of packs smoked per year/number of years of smoking). We also sought to explore whether participation in the trial in general or the smoking cessation intervention (SC) condition specifically was associated with improvement in overall health ratings and in severity of medical or psychiatric problems.

Methods

Study Procedures

The procedures for the smoking cessation trial from which the data presented here originates, are described in detail by Reid and colleagues (2007a). After obtaining informed consent, the Study Clinician, performed a medical and psychiatric history and physical examination, and determined eligibility. Inclusion criterion required that participants were current smokers of at least 10 cigarettes per day who were interested in quitting smoking, had been enrolled in their respective substance abuse treatment programs for at least 30 days, and were medically and psychiatrically stable. Eligible patients were randomly assigned in a 2:1 ratio to either 1) substance abuse treatment-as-usual (TAU) plus smoking cessation treatment (SC) or 2) substance abuse treatment-as-usual (TAU). Both the SC and TAU participants were seen by study staff at screening, baseline, and at scheduled study visits weekly for 9 weeks with follow-up visits at weeks 13 (3 month) and 26 (6month). The participants assigned to the SC condition were also scheduled for 9 group smoking cessation counseling sessions and underwent 8 weeks of treatment with transdermal nicotine patches (NicoDerm CQ®), free of charge. In the TAU condition, participants were offered deferred smoking cessation treatment after completion of the last follow-up visit.

Participants, Study Sites and Staffing

Participants were current patients with drug or alcohol dependence at one of 7 participating community based treatment programs (CTP) affiliated with the NIDA CTN. These included 5 methadone maintenance treatment programs and 2 outpatient drug and alcohol rehabilitation clinics. Participating treatment programs did not offer smoking cessation treatment on site. Each site had a Study Clinician, who oversaw the medical safety aspects of the trial. The Study Clinician at each of the 7 sites was a licensed physician, assisted at five of seven sites by a study nurse. The Study Clinician performed the baseline psychiatric and medical evaluation. The Study Clinician and/or their collaborating nurse saw study participants weekly and reviewed recorded medical and health related data, including medical and psychiatric problems at baseline, concomitant medications, and adverse events (AEs). Research staff also saw participants at each study visit, collected vital signs measures (heart rate, blood pressure, respiration,) and coordinated data collection. Demographic Information, including age, sex, race (White, Black, Asian/Pacific Islander, Native American/.Alaskan Native, mixed race), detailed information on ethnicity (White/non-Hispanic; Black/ African, African-American, West Indian, etc; Hispanic; Asian/ Pacific Islander, country of origin), years of education completed, employment status (including current employment status, past 30 days and 3 years), and current Marital status, was collected using a standardized form. Smoking history, to measure chronicity and severity, was also recorded on a standard form, including, the age first smoked, age the participant stated smoking regularly, number of years a participant had smoked,, the number of cigarettes smoked per day, cigarettes per day average over past year, months of smoking in past year, brand and types of cigarettes smoked, other tobacco products used, and information on attempts to quit smoking in the past.

Medical Outcome and Health Status Assessments

All participants, both SC and TAU groups, underwent matching assessment schedules. Using case report forms standardized across study sites, medical and psychiatric problems at baseline were recorded by the Study Clinician during their baseline examination of the patient. Patients were asked if they had a history of 17 different conditions and asked to answer “yes”, “no”, or “unsure”, a “refused answer” option was also available. Concomitant medications and adverse events were also recorded on standard forms at each study visit, and shown here as health indicators during the study. The Addiction Severity Index (ASI-Lite) (McLellan et al., 1992; Cacciola et al., 2007) was administered at baseline, and at week 8 (immediately after the treatment phase), week 13 and week 26. The ASI medical, psychiatric and drug use composite scores were used as measures of medical and psychiatric severity. The composite scores, which range from less severe (0) to most severe (1), have been developed from combinations of items in each problem area that are capable of showing change (i.e. based on the prior thirty day period, not lifetime) and that offer an internally consistent estimate of problem status.

Data Analysis

Analyses of baseline medical and psychiatric status (including baseline ASI, medical and psychiatric history and physical examination) included all screened participants who were examined by the Study Clinician (N=350), while the analysis of the ASI outcome data, Adverse events and concomitant medications was limited to the 225 patients who were randomized. Rates of medical and psychiatric problems, concomitant medications, and adverse events, were compiled for descriptive purposes (counts and percentages). To further characterize patients with medical or psychiatric problems, we examined associations between a panel of predictor variables and presence of any medical problem, any psychiatric problem, any concomitant medication, the ASI medical severity composite score, and the ASI psychiatric severity composite score. The panel of predictor variables included

demographics (including age, race, and employment status), indicators of nicotine dependence severity (number of cigarettes smoked per day) and chronicity (years of smoking), and drug dependence severity as measure by the ASI drug composite. Pack-years was used as a measure of smoking severity and is calculated as the average number of packs of cigarettes smoked per year over the number of years a person has smoked. Associations were tested using Chi-square, t-test and correlation procedures. The correlation between the ASI medical, psychiatric and drug use composites was also examined. To evaluate medical and psychiatric outcome over the course of the trial, linear models were fit on the ASI medical and psychiatric composite scores with treatment condition (SC vs. TAU), baseline ASI score, and time (weeks 8, 13 and 26 time points) as independent variables. Models were first fit including all interactions, and interactions at the $P > .10$ level were dropped, according to a backwards elimination procedure to arrive at a final model. As a descriptive measure of effect size, the standardized difference between means (Cohen's d) was calculated for differences between treatment groups in ASI composite scores at each follow up time point (weeks 8, 13, and 26), using the raw means and standard deviations.

Results

Participants

The sample (see Reid et al., 2007a) was drawn from 415 consented individuals. A description of the study population can be found in Table 1. On average, 10.36% of the 7 participating treatment programs' total census was represented in the sample (14% for methadone clinics and 7% for drug-free outpatient clinics). Of these, 350 participants have baseline medical and psychiatric assessment data, and 225 (179 on methadone maintenance and 46 in outpatient substance abuse treatment) were randomized to either SC ($n = 153$) or to TAU ($n = 72$). The sample was on average middle aged (mean age 41.6 years, $SD = 9.72$), high school educated, unemployed, and almost 50% female (Table 1). Opioid and cocaine dependence were the most common primary drugs of abuse (Table 1). On average participants smoked just over one pack per day, and had been smoking for 25 years. The average number of days that patients had been enrolled in their current substance abuse treatment program was fairly long for methadone programs (mean = 1413 days, $SD = 424$), and shorter for drug free outpatient programs (mean = 519 days, $SD = 43$).

Prevalence and Correlates of Medical and Psychiatric Problems at Baseline

Table 2 shows the prevalence of medical and psychiatric problems documented during the baseline clinical evaluation. Most participants (72.8%) had one or more medical problems, and 64.1 % had one or more psychiatric conditions. The most frequent medical problems were allergies, liver problems, asthma, high blood pressure, history of head trauma and gastrointestinal disorders (Table 2). The frequencies of seizures and heart disease, each at just under 10%, are also notable for a middle aged population. Among psychiatric disorders (Table 2), major depression and anxiety disorders were most prevalent, although the rates of bipolar disorder, schizophrenia, and Tourette's disorder are also notable given that these disorders occur much less frequently in the general population.

Medical problems were significantly associated with increased age ($\chi^2 = 3.398$, 1 df, $p = .0038$), years of smoking ($t = -3.31$, 223 df, $p = .001$), and pack-years ($t = -3.13$, 223 df, $p = .002$). 69% of participants under age 40 and 85% over age 40 reported one or more medical problem.

Psychiatric problems were more prevalent among women (70%) than men (54%) ($\chi^2 = 6.494$, 1 df, $p < .01$), and among Caucasians (78%) than among African-Americans (51%) or Hispanics (53%) (Fisher's $p < .001$) and were associated with younger age at a trend level

(point-biserial $r = -0.11631$; $p < .09$). Psychiatric problems were not significantly associated with smoking variables (packs per day or years smoking).

Prevalence and Correlates of Medical and Psychiatric Problems during study

Table 3 displays the proportion of patients taking concomitant medications for various medical and psychiatric indications. Most of the sample (84.6%) were taking medication for at least one medical condition, the most common being pain (37.7%). The next most common medical conditions for which medication was being taken were cardiac and vascular disorders (mainly high blood pressure), respiratory disorders (mainly asthma), and sleep disorders (mainly insomnia), at over 20% each. Interestingly, more than half of the pain medications were over the counter preparations (59%), while the majority of sleep medications (86%) were prescriptions. Almost half of patients (49.3%) took medications for psychiatric conditions, consistent with their high prevalence (see above and Table 2). The frequencies of medication taken for major depression (38.9%) and bipolar disorder (8.6%) were consistent with the frequencies of these disorders, while only 19.4% of patients were taking medication for an anxiety disorder, compared to the frequency of anxiety disorders of 35% (see above).

Similar to the pattern for baseline medical conditions, frequency of medication use increased with age (point-biserial $r = 0.247$; $p < 0.001$), and with years of smoking (point-biserial $r = 0.229$; $p < 0.0005$). Most (73%) of participants under age 40 and 93% of participants over age 40 reported using one or more medications. Medication use was not significantly associated with gender, or employment status. The proportion of participants with one or more medication at baseline is significantly higher (Fisher's $p = .0481$) in Black non-Hispanic (95%) than in White non-Hispanic (84%) and Hispanic (82%) participants. Use of one or more medications was also associated with pack-years ($t = -3.36$, 223 df, $p = .002$), but was not associated with current packs of cigarettes per day.

As an additional measure of medical and psychiatric problems in the sample, we also compared adverse events reported in the SC and TAU groups. A total of 801 adverse events were reported, with 201 of the 225 randomized participants reporting one or more adverse events over the course of the study (that is from week 1 to week 26). An average of 2–3 adverse events per person were reported during the course of the trial (thru Week 9 study visit). The most frequently reported events were general disorders which included complaints of irritation at the administration site for the nicotine replacement patch or conditions possibly related to cessation of smoking (49.7 for SC, 25% for TAU). Other adverse events included, respiratory problems (48.4%) (mainly sinus congestion, cough, and sore throat), gastrointestinal problems (45.3 %) (mainly nausea, vomiting, and oral/dental complaints), nervous system problems (37.3%) (mainly headache and dizziness), psychiatric problems (35.1%), injuries, poisonings and procedural complications (26.2%), investigations (24.4%), infections (24%), and musculoskeletal problems (23.1%). There was no difference in the number of AEs reported between the SC and TAU groups. Vital signs assessed weekly during treatment did not indicate any difference between treatment groups for heart rate ($F = 0.43$, $p = 0.511$), blood pressure (systolic $F = 0.59$, $p = 0.443$; diastolic $F = 0.67$, $p = 0.414$), respiration rate ($F = 0.40$, $p = 0.529$).

Medical, Psychiatric and Drug Use Outcomes

ASI medical, psychiatric and drug use composite scores at baseline, and at weeks 8, 13 and 26 are displayed in Table 4. There are modest reductions across time for each composite score, with a pattern of greater improvement on the smoking cessation intervention (SC) compared to treatment as usual (TAU) at the week 8 time point, corresponding to a small effect size (standardized difference between means) of 0.24 in the SC group, with scores of

the two treatment groups then converging over weeks 13 and 26. Linear models, fit to test the effects of treatment over time, revealed a trend-level treatment by time interaction ($\chi^2 = 4.93$, $p < .0849$) for the ASI medical composite, reflecting mainly lower medical severity for the SC condition at week 8, immediately after treatment completion, compared to TAU. No significant effects of treatment, or treatment by time were found for the ASI psychiatric or the ASI Drug Use composites.

Discussion

We examined the prevalence and correlates of medical and psychiatric problems among drug dependent patients enrolled in community-based drug treatment programs that were cigarette smokers entering a clinical trial testing a smoking cessation intervention (SC) combining nicotine patch with cognitive behavioral group counseling (Munoz et al., 1988; Hall et al., 1994; Patten et al., 1998). The primary aim of the larger study was to test the effectiveness of the SC intervention, which was found to be modestly effective compared to a treatment as usual (TAU) control condition (Reid et al., 2007a). The present analysis was in response to anecdotal observations made by study staff that medical and psychiatric problems were common in these patients, that engagement in smoking cessation treatment may be associated with a reduction in health problems, and that the regular contact with primary care staff entailed in study participation might have benefits in terms of increasing attention to these problems.

Rates of medical and psychiatric problems and of concomitant medications were indeed found to be high compared to those of the general population and smokers. According to the 2005 Medical Expenditure Panel Survey (Machlin, Cohen, & Beauregard, 2008) 60% of the U.S. adult population had at least one chronic medical condition. This is compared to 72.8% reported here. Similarly, the National Institute on Mental Health estimates that one in four adults (25%) has a diagnosable psychiatric condition (NIMH, 2008), compared to 64.1% reported by our sample.

A majority of the substance abusing population (Richter, Choi, McCool, Harris, & Ahluwalia, 2004), and of substance dependent patients engaged in treatment (Hughes, 1996; Sussman, 2002; Stark & Campbell, 1993), also smoke cigarettes. It has been estimated that upwards of 70% of individuals engaged in substance abuse treatment are smokers (Richter, Ahluwalia, Mosier, Nazir, & Ahluwalia, 2002). This is compared to 21% in the general population, with an increase to 29.9% for persons of lower socioeconomic status (NHIS, 2005). A common concern among practitioners is that a focus on treating smoking will interfere with efforts to treat the presenting alcohol or drug problem, despite evidence to the contrary, namely that concurrent smoking interventions do not worsen (Reid et al., 2007a), or may even improve drug use outcome (Lemon, Friedman, & Stein, 2003). This is consistent with the results shown here where all study participants, including those in the SC condition, showed improvement in ASI Psychiatric composite scores over time. Cigarette smoking has well known mortality and morbidity, and undoubtedly contributes to the adverse health outcomes of drug dependent patients (Hurt et al., 1996). From the perspective of service delivery, addressing a patient's smoking may represent an opportunity for substance abuse treatment providers to intervene, not only around the nicotine dependence itself, but also to engage drug dependent patients more broadly in addressing other primary medical and psychiatric care issues that are present (CDC, 2008).

Descriptive findings on the prevalence of medical problems, concomitant medications, and adverse events are consistent with those reported in other investigations of substance dependent populations (O'Toole, Strain, Wand, McCaul, & Barnhart, 2002; Schroeder, Schmittner, Epstein, & Preston, 2005). Among the most frequent were respiratory problems,

which would be expected among chronic smokers. Others are suggestive of physical wear and tear and trauma, including musculoskeletal problems, injuries, head injury, epilepsy, and pain. The confluence of pain and addiction has been receiving increasing attention (Butler, Fernandez, Benoit, Budman, & Jamison, 2008; Manubay, Comer, & Sullivan, in press). Physicians are reluctant to treat pain aggressively among drug dependent patients, particularly those with opioid dependence, and it is notable that the majority of pain medications reported by our sample were over the counter, rather than prescription. Nonetheless, data such as ours suggest the need to increase research and clinical attention to the concurrent management of addiction and pain. The prevalence of liver problems and infections reflect in part viral hepatitis, which is ubiquitous among opioid dependent patients who have ever injected drugs, as well as HIV, (NIDA, 2009) and probably represent underestimates of the actual prevalence in this sample. Finally, some of the problem areas noted in this study, such as high blood pressure, heart disease, and diabetes, are largely diseases of aging. While one would expect such problems to begin to emerge in a middle-aged population, it is conceivable that the drug dependent lifestyle and cigarette smoking accelerate the development of such problems. This suggests that drug dependent populations are aging and accumulating a range of medical problems needing evaluation and management.

The high prevalence of psychiatric disorders among drug dependent patients is well documented, as is the association of co-occurring psychiatric disorders with worse prognosis for drug use outcome (Hasin et al., 2002; Hasin, Nunes, & Meydan, 2004; Rounsaville, Kosten, Weissman, & Kleber, 1986). Psychiatric disorders are also associated with nicotine dependence (Grant, Hasin, Chou, Stinson, & Dawson, 2004), compounding the comorbidity and inter-relationship of these disorders. The rates of major depression, anxiety disorders, bipolar disorder, and schizophrenia observed here are clearly elevated compared to corresponding rates in the general population (Kessler et al., 1997; Regier et al., 1990). It is of interest that the rates of patients taking medications for major depression and bipolar disorder (Table 3) are only slightly below the rates of the disorders themselves (see Table 2). For anxiety disorders, however, our observed prevalence was 35%, but only 19% took medication for anxiety. As with pain, this may reflect reluctance on the part of clinicians to medicate anxiety among drug dependent patients. Benzodiazepines are problematic because of their abuse potential in this population, but there are several alternative medications for treating anxiety with less abuse potential, such as antidepressants, buspirone, anticonvulsants, or low doses of second generation neuroleptics (e.g. quetiapine).

There has been increasing discussion in the literature on integrating primary medical and/or psychiatric care with substance abuse treatment. Several studies have shown improvements in addiction severity and treatment outcomes when addiction services are combined with primary medical care (Saitz, Horton, Larson, Winter, & Samet, 2005; Freidmann, Zhang, Henrickson, Stein, & Gerstein, 2003; Samet et al., 2003; Druss et al., 2006). Several studies have shown that treatment of depression among opioid dependent patients is effective and may also improve substance use outcomes (Nunes et al., 1998; Stein et al., 2004). In the study reported here, regular contact with primary medical providers as part of participation in a smoking cessation trial was associated with modest improvements in medical and psychiatric severity, with a trend toward greater medical improvement during the active phase of the trial. Furthermore, engagement in smoking cessation may be a promising strategy for engaging drug dependent patients more broadly and improving their medical and psychiatric outcomes.

The data presented here have important limitations, stemming mainly from the fact that the study was not designed with the main aim of documenting medical and psychiatric problems, or treating them. Thus, rates of disorders were based upon a clinical evaluation,

where the main purpose was to determine eligibility and safety to participate in the smoking cessation trial, rather than a structured diagnostic evaluation for medical or psychiatric problems. In some instances (e.g. hepatitis C and HIV) the rates of disorders reported probably underestimate the actual rates which would have been detected with a concerted diagnostic effort. Further, the outcome data examined, namely the ASI medical, psychiatric and drug use composites, are global scores based on problems reported to an interviewer by patients rather than objective assessment of medical problems, or structured assessments of psychiatric disorders. Another limitation is the lack of generalizability stemming from the limited patient population (primarily from methadone maintenance programs). Although the majority of drug dependent patients smoke cigarettes, and surveys of the patients at the recruitment sites for this study suggested that a surprising majority were interested in trying to quit smoking (Reid, 2007b), those patients who actually pursue and enter a smoking cessation program may be motivated to quit partly by emerging or worsening medical problems, which they may attribute to smoking. Thus, the sample here may be enriched with patients with medical problems.

Nonetheless, this analysis may help add to the growing literature that addresses the medical and psychiatric problems that are endemic to the substance abusing population and lend some possible solutions to the problem. The high rates of a range of medical problems, as well as psychiatric problems, are striking in this sample of drug dependent patients, and suggest that smoking cessation represents an opportunity to engage such patients more broadly in addressing their physical and emotional health. More research is needed on developing comprehensive treatment strategies that address substance dependence, nicotine dependence, and medical and psychiatric problems in an integrated fashion. Targeting smoking cessation might be an opportunity to promote engagement with comprehensive medical care, as well as an end in itself. The addiction treatment system is unique in that it is largely separate from the medical and psychiatric care delivery systems, and nicotine dependence tends to be ignored in all three of these systems. Integration of treatment could result in significant improvement in both medical, psychiatric and addiction outcomes and save costs, and could thus have far reaching implications for public health (Ray, Mertens, & Weisner, 2007; Dismuke et al., 2004; McLellan, Lewis, O'Brien, & Kelber, 2000).

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Table 1

Description of study participants: 350 cigarette smoking patients at community-based substance abuse treatment programs.*

Demographics	Smoking Cessation	Treatment As Usual
Age (yr)	41.6 ± 10.2	41.0 ± 8.6
Female	49%	47%
Race		
White (not Hispanic)	37%	42%
Black (not Hispanic)	28%	22%
American Indian/Alaskan Native		2%
Asian Pacific		3%
Hispanic - Puerto Rican	35%	30%
Education (yr)	11.4 ± 2.3	11.9 ± 2.1
Employed or Student	40%	33%
Cigarette Smoking		
Cigarettes/day	22.3 ± 11.6	21.6 ± 10.2
Smoking (yr)	25.2 ± 11.4	24.3 ± 10.0
Substance Abuse Treatment		
Number of Days in Treatment at CTP	790 ± 1215	799 ± 1384
Number of Times in Treatment for Drugs	5.1 ± 6.9	5.0 ± 7.1
Number of Times in Treatment for Alcohol	1.0 ± 3.9	0.6 ± 2.1
DSM-IV Substance Dependence		
Opiates	84 (55%)	43 (60%)
Cocaine	34 (22%)	10 (14%)
Alcohol	15(10%)	2 (2%)
Cannabis	10 (7%)	9 (12%)
Amphetamines	6 (4%)	4 (6%)
Benzodiazepines/Sedatives	4 (3%)	4 (6%)

* Values in the table were compiled from participants responses to several questionnaires including demographics, treatment history, and smoking and drug use.

Table 2

Frequency of medical and psychiatric problems among 350 cigarette smoking patients at community-based substance abuse treatment programs.*

	Number of Patients	Percent
Any Medical Condition	225	72.8
Allergies	99	28.3
Liver Problems	99	28.3
Asthma	87	24.9
High Blood Pressure	72	20.6
Head Injury	68	19.4
Gastrointestinal disorders	55	15.7
Skin	33	9.4
Epilepsy/Seizure Disorder	30	8.6
Heart Disease	30	8.6
Neural Damage	25	7.1
Kidney	18	5.1
Thyroid	8	2.3
Any Psychiatric Condition	211	64.1
Major Depression	157	44.9
Anxiety Disorders	116	35.3
Bipolar Disorder	46	13.1
ADHD	27	7.7
Schizophrenia	25	7.1
Tourette's	21	6.0

* Participants were examined by a physician as part of the evaluation prior to enrollment in a clinical trial of a smoking cessation intervention. Values in the table are number and percent of patients with conditions in each category.

Table 3

Frequency of concomitant medications taken for co-occurring medical and psychiatric problems among 350 cigarette smoking patients at community-based substance abuse treatment programs. *

Conditions for which medications were taken	Number of Patients	Percent
Any Medical Condition	296	84.6%
Pain	122	37.7%
Cardiac and Vascular Disorders	80	24.7%
Respiratory	74	22.8%
Sleep	73	22.5%
Cold and Allergy	61	18.8%
Supplements	50	15.4%
GI	47	14.5%
Infections and Infestations	46	14.2%
Metabolic	39	12.0 %
Musculoskeletal	34	10.5%
HIV/Aids	25	7.7%
Reproductive	19	5.9%
Nervous System	18	5.6%
Skin	15	4.6%
Surgical or Procedures	10	3.1%
Blood and Lymphatic System Disorders	9	2.8%
Renal	4	1.2%
Eye Disorders	4	1.2%
Ear and Labyrinth Disorders	2	0.6%
Any Psychiatric Condition	160	49.3%
Major Depression	126	38.9%
Anxiety and Panic Disorders	63	19.4%
Bi Polar Disorder	29	8.6%
ADHD	7	2.2%
Schizophrenia	10	3.1%
Unspecified psychosis	20	6.2%
Multiple psychiatric indications	16	4.9%

* Participants were examined by a physician as part of the evaluation prior to enrollment in a clinical trial of a smoking cessation intervention. Values in the table are number and percent of patients reporting medications for problems in each category.

Table 4

ASI Drug Use, Medical and Psychological Composite Scores for the 225 randomized (179 SC group and 72 TAU group) participants at community-based substance abuse treatment programs. *

Treatment Group	SC	TAU	
Visit Week	Mean(SD)	Mean(SD)	Effect Size (SC-TAU)
ASI Drug Use			
Baseline	0.18(0.11)	0.19(0.12)	-0.07 (-0.35,0.21)
Week 8	0.15(0.10)	0.18(0.13)	-0.22 (-0.53,0.09)
Week 13	0.15(0.11)	0.16(0.13)	-0.08 (-0.38,0.22)
Week 26	0.14(0.11)	0.14(0.12)	0.04 (-0.28,0.36)
ASI Medical			
Baseline	0.34(0.35)	0.34(0.36)	0.01 (-0.27,0.30)
Week 8	0.24(0.31)	0.32(0.36)	-0.24 (-0.55,0.07)
Week 13	0.28(0.33)	0.29(0.36)	-0.02 (-0.32,0.29)
Week 26	0.31(0.35)	0.31(0.38)	-0.01 (-0.33,0.31)
ASI Psychological			
Baseline	0.25(0.24)	0.24(0.25)	0.05 (-0.24,0.33)
Week 8	0.20(0.23)	0.19(0.24)	0.05 (-0.26,0.35)
Week 13	0.22(0.24)	0.17(0.22)	0.23 (-0.07,0.53)
Week 26	0.20(0.23)	0.20(0.23)	0.01 (-0.31,0.34)

* Values in the table are the mean (with standard deviation) of the composite scores of patients in each category, plus the effect size between groups.