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# **Addressing Tobacco Dependence among Veterans with a Psychiatric Disorder: A Neglected Epidemic of Major Clinical and Public Health Concern**

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*Veterans and non-veterans with a psychiatric disorder are two to three times more likely to be tobacco dependent, and many of these individuals will die of tobacco-caused medical disorders compared to those without a psychiatric disorder. The high rate and severity of tobacco dependence among psychiatric patients is both a silent epidemic and a major health care issue for the VA health care system, since 25 to 40 percent of all veterans receiving treatment within the VA system have a psychiatric disorder. There is a great need to immediately address the issue of tobacco dependence among veterans with psychiatric disorders at the clinical, program, and systems levels, to fund more research to better understand the problem, and to develop and evaluate new interventions. There appear to be several unique biological, psychological, social, and treatment setting factors that account for the increased risk for tobacco dependence in this population, which result in clinical treatment issues. These include when to provide tobacco dependence treatment relative to the acuity of the psychiatric disorder, how best to monitor the effects of quitting smoking on psychiatric medication blood levels and symptoms, and how to enhance quit attempts through more intensive psychosocial and medication treatments. The goals of this paper are to increase VA, national, and international visibility of this neglected clinical and public health concern; to summarize some of the known clinical issues that are unique to this population; and to make specific recommendations for better addressing the problem within the VA health care system. There also appears to be a strong interest in better addressing this issue by national VA leaders, an effort that must be expanded across the 22 relatively autonomous Veterans Integrated Service Networks (VISNs) to address the issue within all VA mental health and addiction treatment settings. The VA is well positioned to develop, test, and promote innovative tobacco dependence treatment approaches to improve the health of veterans, and this work will have a ripple effect in helping behavioral health care practitioners nationally and internationally. The VA must first raise awareness of this issue within the VA; develop a change plan that includes clinical, program, and systems*

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*level changes; and implement training, services, research, and other initiatives. The largest outpatient and inpatient expenses within the VA are related to treating and managing chronic, tobacco-related or tobacco-caused medical illnesses. Fighting stigma against psychiatric disorders begins with placing equal value on all lives. Addressing tobacco because it increases morbidity and mortality for this population should be enough reason for a call to arms to help veterans with psychiatric disorders get the basic tobacco dependence treatment services that will improve the quality of their lives by reducing the health risks associated with tobacco dependence.*

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Tobacco dependence among veterans and non-veterans with a psychiatric disorder (either a mental illness and/or a substance use disorder) is two to three times more common than in the general population.<sup>1, 2, 3</sup> In fact, tobacco dependence is the rule in this population rather than the exception. This is an important issue for the VA because the VA is the largest provider of behavioral health care in the nation and about 25 to 40 percent of veterans have a psychiatric disorder. Although public health initiatives and tobacco control strategies for the general population have greatly reduced tobacco use during the past 40 years in the United States, the rate of tobacco dependence among psychiatric patients continues to be extremely high. With the reductions in smoking rates occurring in the general population but not among individuals with psychiatric disorders, the proportion of smokers with psychiatric disorders who smoke has increased, and now nearly half of all the cigarettes consumed in the United States are by individuals with a psychiatric disorder.<sup>4</sup> Tobacco dependence results in increased morbidity and mortality, yet tobacco use and dependence has been largely ignored as a clinical treatment issue in most mental health and addiction treatment settings.<sup>5, 6, 7</sup> The mental health and addiction treatment systems have often not only tolerated smoking, but actually promoted it as a strategy for staff to manage patient behaviors and to structure patients' time.<sup>8</sup> There may be unique biological, psychological, social, and treatment setting factors that account for the increased vulnerability of this population to initiating, maintaining, and failing to abstain from smoking. There is a great need within the VA to initiate treatment services immediately, to invest in research that will help improve our understanding of the problem, and to develop new clinical, program, and system interventions.

The goal of this paper is to increase VA, national, and international visibility of this neglected clinical and public health concern. In addition, the paper summarizes what has been reported about this population of smokers, and makes specific recommendations for better addressing the problem within the VA health care system. The effort to address this issue has begun by national VA leaders and must be expanded across the 22 relatively autonomous Veterans Integrated Service Networks (VISNs). There is a need to make clinical, program, and systems level changes; and to implement training, services, research, and other initiatives. The VA is well positioned to develop, test, and promote innovative tobacco dependence treatment approaches to improve the health of veterans, but this work will have a ripple effect in helping behavioral health care practitioners nationally and internationally. The VA has the opportunity to make changes at all levels due to its being a contained system that has many innovative

clinical structures to facilitate change, including an excellent computerized medical record and an intranet system that links different regions of the country. Based on the literature and expert opinion—including several national meetings on this topic, such as The Robert Wood Johnson Foundation’s Addressing Tobacco Dependence in Mental Health and Substance Abuse Treatment Settings national summit meetings—this paper recommends increasing national and international awareness of the issue, enhancing training and clinical services, conducting more research, and involving public health/tobacco control specialists.

## **The Scope of the Problem in the VA**

The VA is the largest provider of behavioral health care in the nation, having treated close to 800,000 veterans in specialized mental health programs in fiscal year 2003, at a total cost of over \$2 billion.<sup>9</sup> The extensive use of mental health services among veterans is to be expected considering that 25 to 40 percent of veterans seeking health care at the VA have a psychiatric diagnosis, and more than 80 percent have underlying mental health problems.<sup>10</sup> Severe mental illness, primarily psychoses, is a major problem among veterans. In 1998, about 174,000 veterans were service-connected for psychoses, of which more than 67,700 used VHA services.<sup>11</sup> An estimated 340,000 male veterans had co-occurring serious mental illness (SMI) and a substance use disorder in 2002 and 2003, especially among those individuals aged 18 to 25. Soldiers are returning from combat operations in Iraq and Afghanistan with a wide variety of mental health problems, including post-traumatic stress disorder (PTSD), anxiety, and major depression.

## **High Rates and Serious Consequences**

Individuals seeking treatment at the VA are more likely to be smokers and heavy smokers compared to the general population,<sup>12</sup> including veterans with a psychiatric disorder. Veterans with psychiatric disorders, particularly those with serious mental illness, have high rates of undetected and untreated medical problems and elevated medical mortality rates, many of which are related to tobacco-caused illnesses.<sup>13</sup> The largest outpatient and inpatient expenses within the VA are related to chronic, tobacco-related illnesses. Individuals with psychiatric disorders die disproportionately from cardiovascular and respiratory illnesses that are closely linked to smoking.<sup>14, 15, 16</sup> The life expectancy for patients with schizophrenia is 20 percent shorter than the national average, and the cardiovascular mortality among people with the disorder is twice as high as in the general population.<sup>17</sup> Tragically, many individuals with mental illness or addiction will likely die of medical disorders caused by smoking.<sup>18</sup> Smokers with serious mental illness also appear to have more psychiatric hospitalizations and higher psychotropic medication doses than non-smokers with schizophrenia.<sup>19, 20</sup> Smokers with serious mental illnesses tend to be heavier smokers and to also be effective and efficient smokers with higher levels of tobacco metabolites (cotinine) compared with matched controls, suggesting a deeper inhalation of nicotine.<sup>21</sup> Heavier smoking results in greater exposure to carbon monoxide and tars, in addition to greater vulnerability to nicotine dependence and withdrawal. Of particular

concern for the SMI population is the fact that the tars contained in tobacco smoke induce liver enzymes that hasten the metabolism of many psychiatric medications, resulting in increased dosage requirements, costs, and side effects. Other health consequences are due to the effects of second-hand smoke on family members, friends, and even fetuses. Prenatal smoking is also associated with maternal depression and is strongly linked to conduct problems and later antisocial outcomes in the offspring.<sup>22</sup>

Smokers with psychiatric disorders also suffer financially as a result of smoking. A study by Steinberg et al. revealed that a sample of smokers with schizophrenia spent a median of \$142.50 (range \$57-319) per month on cigarettes.<sup>23</sup> Given that the median public assistance benefit was \$596, this represented an expenditure of at least 27 percent of monthly income on cigarettes. Participants went to great lengths to roll their own cigarettes, purchase generic products, and use tax-free internet sites in order to save money, showing a remarkable level of initiative for this population. In addition, it may cost more to treat tobacco dependence in smokers with psychiatric disorders because they are more likely to be heavier smokers<sup>24, 25</sup> and have an earlier relapse back to smoking after a quit attempt, and need several treatment episodes and more intensive treatment.<sup>26, 27, 28</sup>

## **The Silent Epidemic**

Even with all the growing evidence of the high rates and substantial consequences of smoking in this population, little has been done, and there are many opportunities to address this public health and clinical problem. Why has this silent epidemic occurred? Why has there been little advocacy to help this group of smokers? Many mental health (non-tobacco dependence) experts remain ambivalent about encouraging smokers with mental illness to quit smoking. Neither mental health advocacy groups, nor tobacco advocacy groups are championing the cause, and psychiatrists and other behavioral health staff members are largely uneducated about treating tobacco. Mental health researchers are becoming more aware of the physical health care needs of patients with psychiatric disorders, and yet a recent review of articles on physical health care for this group failed to include smoking as a factor, nor was tobacco dependence treatment specifically recommended.<sup>29</sup> Perhaps stigma is preventing the tobacco control community from increasing efforts to target this substantial group of smokers. Because of the substantial health consequences and the addictive nature of tobacco, this issue has become a major public health issue for the general population. The same standards should apply for individuals with psychiatric disorders. Before an effective tobacco dependence treatment plan can be proposed for the mentally ill, a number of myths must first be dispelled and long-standing questions about the issue answered. Some believe that suffering from a psychiatric illness requires self-administering tobacco to improve psychiatric illness, and that perhaps tobacco is the most cost-effective way to self-medicate daily stresses. Others have suggested that tobacco use is necessary to fill unfulfilled lives. Still others have wondered why, other than increased morbidity and mortality, this issue needs to be addressed. While

these questions and beliefs are unfortunately common with regard to psychiatric populations, they are not raised when considering the general population. Stigma and ignorance maintain the silent epidemic. How have clinicians, family members, and patients who so desperately fight stigma on most other fronts missed the stigma blatantly implied by ignoring tobacco addiction within this population? Many of these issues are due to lack of training and lack of a sense of responsibility for treating tobacco dependence.

**Table 1: Recommendations to address smoking among veterans with psychiatric disorders**

<b>(1) Raise awareness of the need to address tobacco in this population</b>
<ul style="list-style-type: none"> <li>* Make a commitment to address the issue and develop a specific change plan</li> <li>* Include clinical, program, and system change</li> <li>* Integrate this into the overall Tobacco Plan</li> </ul>
<b>(2) Train staff and promote integrating tobacco treatment into mental health / addiction settings</b>
<b>(3) Increase funding for VA research on the topic</b>
<b>(4) Create and Implement VA policy and other system-level changes</b>

## **Raising VA Awareness of Tobacco Dependence among Psychiatric Patients**

An important first step for the VA health care system will be to recognize the severity of tobacco dependence among the 25 to 40 percent of veterans with a psychiatric disorder. The VA is ideally suited to pursue initiatives in addressing tobacco in mental health and addiction treatment settings. Momentum is slowly building in the private, public, and Veterans Health Administration settings to address this issue. Mental health and addiction treatment programs and clinicians must begin to see addressing tobacco as part of their clinical missions. There is also interest in the academic world in understanding the relationships between nicotine use and psychiatric disorders. Important questions remain unanswered about the onset and progression of both tobacco use and psychiatric disorders and the inter-relationships among these conditions. The VA has developed national programs of excellence in other types of co-occurring mental and substance use disorder sub-types, and there is strong evidence to support the effectiveness of integrated treatment in mental health and addiction treatment settings.<sup>30, 31</sup> Table 2 outlines our key recommendations for raising awareness and creating a VA-wide and VISN-wide plan to address tobacco dependence in this population.

***Table 2: Raise Awareness of the Need to Address Tobacco in this Population***

- That VA Leadership acknowledges the need to include a focus on addressing tobacco in this population.
- That the topic be included in national VA meetings.
- Create a National Best Practices committee of tobacco treatment experts to develop a plan to target this population's unique needs. Include representatives from:
  - ◆ The Mental Health Strategic Health Care Group (MSHHCG)
  - ◆ The Seriously Mentally Ill (SMI) Committee
  - ◆ The Public Health Strategic Healthcare Group
- Develop a strategic plan and clinical practice guidelines for this population, including a timeline and implementation plan.
- The MSHHCG should designate funding to implement the strategic plan and clinical practice guidelines.
- VA regional service networks should create a workgroup to implement the guidelines developed by the national tobacco committee.
- The Northeast Program Evaluation Committee, or the Serious Mental Illness Treatment Research and Evaluation Center should include the prevalence and treatment of tobacco dependence as part of their national report card.
- Increase information on the link between psychiatric disorders and tobacco using the VA health care system's computerized health care record and require the inclusion of addressing tobacco into computer assessments, treatment plans, and treatment within mental health and addiction treatment settings.
- Addressing tobacco in this population requires:
  - ◆ Including primary care
  - ◆ Including tobacco dependence experts
  - ◆ Including mental health and substance abuse providers

The VA's efforts will support the more global need for increased attention to this public health problem. Examples of other recent national level activities that are making efforts to increase national awareness of the need to integrate tobacco dependence treatment into mental health and substance abuse treatment include:

- The new definition of co-occurring disorders in the Substance Abuse and Mental Health Services Administration (SAMHSA) *Co-occurring Disorders Report* to Congress includes tobacco and recommends the inclusion of tobacco dependence treatment into the National Registry of Effective Programs.

- The Robert Wood Johnson Foundation initiative to Address Tobacco in Mental Health and Addiction has helped create a national strategic plan with the participation of individuals from the National Institute on Drug Abuse (NIDA), National Institute on Alcohol Abuse and Alcoholism (NIAAA), National Institute of Mental Health (NIMH), National Cancer Institute (NCI), the VA and numerous other federal and state agencies, universities, and clinical providers.
- Specific NIH grant requests from NCI, NIDA, NIMH, and NIAAA have targeted research efforts to increase the understanding of tobacco dependence with behavioral health comorbidity and to establish evidence-based clinical treatment interventions for it.
- The Center for Substance Abuse Prevention and other national tobacco control/prevention efforts have targeted prevention programs for adolescents with mental or substance use disorders.
- The American Psychiatric Association has integrated tobacco dependence into its *Substance Use Disorders Treatment* guidelines, instead of conceptualizing it as a separate treatment guideline.
- The National Agency of Drug Abuse Counselors has released a statement that tobacco dependence should be addressed in clinical settings.
- In some states, Medicaid pays for tobacco treatment, including over-the-counter nicotine replacement (NRT) for covered individuals.

## **Why Do Individuals with Mental Illness and Addictions Smoke So Much?**

Research findings suggest that there are unique biological, psychological, social, and environmental factors contributing to the high initiation and continuation rates of tobacco dependence observed in this group. These factors must be considered in developing better ways to address tobacco dependence among individuals with psychiatric disorders on clinical, program, and systems levels. Obviously, this is a very heterogeneous population, even if one just considers the simple categorization according to diagnostic sub-types. The literature that describes the high rates also describes possible explanations for the reasons for association for most psychiatric disorders, including depression,<sup>32, 33</sup> general anxiety disorders,<sup>34, 35, 36</sup> panic disorder,<sup>37</sup> PTSD,<sup>38, 39</sup> schizophrenia,<sup>40, 41</sup> attention deficit hyperactivity disorder (ADHD),<sup>42</sup> alcohol dependence,<sup>43, 44</sup> and drug dependence.<sup>45</sup> A better understanding of the problem may lead to new clinical interventions that consider the heterogeneity of the population. Factors to consider include biological, psychological, and social factors.

Biological factors: Genetics, imaging, and pre-clinical studies emphasize biological factors in creating either a common predisposition to develop both tobacco dependence and another psychiatric disorder, or in contributing to psychological vulnerabilities underlying the “self-medication” hypothesis. The biological perspective has achieved dominance and has been

used to rationalize and excuse ongoing tobacco dependence in this population. There is a need to examine psychosocial factors leading to initiation and continuation, as well as the biological issues of increased morbidity and mortality with ongoing smoking. Appreciating and understanding biological factors may lead to greater knowledge of psychiatric disorders and lead to improvement in the treatment of psychiatric disorders and tobacco dependence.

Data from family, adoption, and twin studies support a substantial genetic influence on the initiation and maintenance of smoking, and several studies suggest a genetic predisposition to both nicotine dependence and depression.<sup>46, 47</sup> Genes that alter dopamine function and transmission may influence the rewarding effects of smoking, as well as tobacco dependence treatment and relapse among these individuals.<sup>48</sup> In adolescents, the likelihood of smoking progression has been strongly associated with the presence of a dopamine D2 receptor allele, and this effect appears most pronounced in those with substantial depressive symptoms.<sup>49</sup> In schizophrenia, genetic studies indicate an autosomal dominant pattern of inheritance linked to chromosome 15q13-14 which is the site of the  $\alpha$ -7 nicotinic receptor.<sup>50, 51</sup> There appear to be genetic factors common to all types of substance abuse.

Nicotine exerts its actions by binding to many different types of nicotinic acetylcholine receptors in the brain. Medications targeting the one specific nicotinic receptor,  $\alpha$ 7, may have potential benefits for the treatment of schizophrenia, ADHD, Alzheimer's disease, and Tourette's syndrome. For example, nicotine's effect on dopamine may account for a reduction in the negative symptoms of schizophrenia,<sup>52</sup> improvement of working memory and selective attention in smokers with schizophrenia, and improvement in the processing of sensory stimulation and abnormal saccadic eye movements.<sup>53</sup> Nicotinic stimulation may improve both cognitive and motor aspects of Parkinson's disease, with a low dose nicotine patch causing improved reaction time, faster central processing speed, reduced tracking errors, and improved motor/extra pyramidal functioning.<sup>54</sup> Another nicotinic receptor,  $\alpha$ 4 $\beta$ 2, is believed to be the key receptor responsible for the development of nicotine addiction and the rewarding aspects of nicotine.<sup>55</sup>

Other non-nicotine chemicals in tobacco may reduce depressive symptoms through their effect on reducing the monoamine oxidase enzyme (MAO B) in a manner similar to MAO inhibitor anti-depressant medications. Reducing MAO B enzyme levels, which is a goal of some antidepressants, slows the breakdown of catecholamines. Studies have shown that the brains of living smokers had 40 percent less MAO B compared with nonsmokers or former smokers.<sup>56</sup> These biological studies reinforce the idea that in spite of any potential benefit from nicotine, the obvious hazards of tobacco smoke point to a need for safer alternatives to tobacco, including increased usage of nicotine replacement and novel drug development for the potential use of nicotinic agonists. The management of smokers with psychiatric disorders may be improved when we better understand how the effects of nicotine are mediated by these receptor sub-types and how these effects influence stress, anxiety, and depression.<sup>57</sup>

Psychological Factors: Smokers with psychiatric disorders report that they, like other smokers, smoke to manage stress and to reduce psychiatric symptoms of depression, anxiety, boredom,

poor concentration, and memory difficulties. Smokers with serious mental illnesses often report that tobacco is considered a “core need,” and is purchased in lieu of food.<sup>58</sup> Additionally, a survey of smokers with substance use disorders found that 57 percent felt it would be at least as difficult or more difficult for them to give up their tobacco as it would be to abstain from using the substance for which they primarily sought treatment.<sup>59</sup> The initiation of smoking and the progression from tobacco use to dependence appears to be linked to depressive symptoms and disorders.<sup>60</sup> Psychiatric patients often report that they smoke in an effort to “self-medicate” their symptoms of depression and anxiety.<sup>61</sup> These factors may contribute to lower levels of motivation and self-confidence for quitting and to strong feelings of learned helplessness.<sup>62</sup>

Addressing tobacco use will require clarification of the smoker’s perceived reasons for use and for not being able to quit, and providing education about how tobacco withdrawal can mimic psychiatric symptoms. In spite of the low motivation to change, which is characteristic of many psychiatric patients seeking treatment, clinicians know how to enhance motivation and treat the psychiatric disorder. These strategies have been effective in enhancing motivation to stop smoking in patients with schizophrenia, depression, and addiction.<sup>63, 64, 65</sup>

Social Factors: Social factors shown to increase smoking risks among individuals with psychiatric disorders include limited education, poverty, unemployment, and an abundance of smoking peers.<sup>66</sup> Smokers with serious mental illnesses often have a substantial amount of unstructured time and report smoking in response to boredom. Unstructured time is also a risk factor for relapse, with many patients resuming use during unstructured weekends.

Either overtly or covertly, the treatment system and the peer support group culture (e.g., Alcoholics Anonymous) have supported and encouraged smoking. Mental health and addiction treatment programs have a history of reinforcing tobacco usage and using tobacco to modify behavior. These treatment settings have many staff members who smoke and endorse the belief that tobacco helps patients manage their psychiatric disorders. Staff smoking with patients is accepted in many settings, and smoking is also frequently allowed at group homes and shared residences, making it difficult for smokers living in these environments to quit.

Protective Factors: There is a need for more research on non-smokers with psychiatric disorders and disorders with associated low smoking rates, like Parkinson’s disease, in order to evaluate the protective factors or interventions that contribute to never smoking, to not progressing from occasional smoking to dependence, and to successful quitting. Although biological and genetic components contribute to tobacco dependence, it is not known if they are more or less robust among smokers with psychiatric disorders. It is possible that the biological factors have been overemphasized and that there are protective aspects of social interventions and policy and treatment system changes.

## **Tobacco Dependence Screening, Assessment, and Treatment in the VA**

The VA has instituted a number of important initiatives in an effort to treat tobacco dependence. The Veterans Health Administration National Smoking and Tobacco Use Cessation Program has adopted a comprehensive, evidence-based tobacco use screening and cessation counseling program, entitled the VA/Department of Defense *Clinical Practice Guideline for Management of Tobacco Use*. It recommends that all veterans seeking care in the VA System be counseled in smoking cessation at least three times a year; however, there is a need to know whether veterans with psychiatric disorders have been effectively targeted by these approaches. The brief counseling sessions recommended by this model involve urging patients to quit, helping them develop a quit plan, providing problem-solving skills training, offering support throughout the quitting process, helping them obtain additional external support, recommending various approved and effective pharmacotherapy interventions, disseminating educational materials, and setting up a follow-up contact to assess progress.<sup>67</sup> Unfortunately, few mental health and addiction treatment staff members have been fully trained to use these approaches and they do not yet consider this to be a responsibility with their patients. There is clearly a need to require all staff, including those in mental health and addictions treatment programs, to be trained in tobacco dependence treatment and to integrate these services at all levels of care. Training could include different approaches such as in-service or computerized training for all psychiatrists and mental health clinicians, and incorporate motivation enhancement techniques in training materials, since many patients may have low motivation to change. Introducing existing tobacco dependence treatments into mental health and addictions treatment settings can be effective in providing treatment to many more smokers.

Another potentially very useful technology to better address tobacco within the VA is the tobacco education clinical reminder system, which appears automatically at fixed intervals in the patient's computerized medical record and reminds the clinician if an intervention is due. The clinician is then required to "clear" the reminder by documenting in the medical record that the appropriate intervention has been implemented. The clinical reminder is linked to a performance or quality improvement measure for smoking cessation counseling, and tracks how often clinicians provide tobacco education and counseling. These types of initiatives—linking clinical practice guideline implementation to report cards and other performance-enhancing measures, and maximizing guideline adherence in this setting—have been successful within the VA.<sup>68</sup> However, it has not been reported whether or not there has been any change in smoking prevalence rates after the introduction of the computerized reminder, or whether there is any difference in cessation rates between smokers whose tobacco use clinical reminders are cleared by the clinician and smokers for whom the reminders remain uncleared.<sup>69</sup>

### **Assessment Issues**

All individuals with psychiatric disorders should have a complete tobacco assessment, including current patterns of tobacco use, motivation to quit, reasons for unsuccessful prior quit attempts, and past experiences with tobacco treatment medications. Although severity

of nicotine dependence is often measured by the six-item Fagerström Test for Nicotine Dependence (FTND), in its current form this measure may not be as appropriate for smokers with schizophrenia—or in others whose smoking is regulated by others—as in the general population due to differences in smoking patterns, living arrangements, and daily routines.<sup>70</sup> These factors may produce an underestimate of nicotine dependence, which may have clinical implications for successful pharmacological treatment if the FTND scores are used to guide the dosage of nicotine replacement medication.

### **Treatment Issues**

Smokers with mental health problems may need more intensive treatments, or treatments modified to address their needs. Treatment planning should focus on the individual needs of the patient and consider the bio-psycho-social risk factors for smoking and mental illness. Requiring that tobacco dependence is on all VA treatment plans for all tobacco users with mental illness and/or addictions is a beginning. All smokers in mental health treatment settings should have a brief tobacco intervention, including a tobacco use assessment, a recommendation to quit, and education about available treatment resources. There is a need to develop patient educational materials on tobacco use in veterans with mental illness and/or addictions for distribution to inpatient units, substance abuse programs, and mental health outpatient clinics.

More intensive interventions include individual and group psychosocial treatments and pharmacotherapy. Intermediate goals for patients not interested in quitting should still be documented in treatment plans. These include forced abstinence in inpatient settings or trying harm reduction approaches. In these cases, as in dealing with any low-motivated client, motivational interventions can be helpful and encourage clients, over time, to adopt more active and abstinence-focused treatment strategies.

In addition to action-oriented treatment interventions, treatment planning for some smokers will include a wider range of options. Assessing motivation to stop smoking is important and helps in determining the appropriate treatment. Treatment plans for low-motivated smokers should focus on education, the desire to quit, and self-efficacy.<sup>71</sup> Smokers in acute psychiatric units often wish to continue smoking after their admission; therefore, inpatient treatment plans should help patients to cope with hospital-imposed abstinence. As with other addictive behaviors, stated motivation to change one's smoking behavior is a strong predictor of initiating and successfully completing a quit attempt. Tailoring interventions to lower levels of motivation can help keep clients in treatment and serve as a legitimate alternative outcome to immediate abstinence. Steinberg and colleagues found that a one-session motivational enhancement therapy session resulted in about one-third of smokers with psychiatric disorders seeking tobacco dependence treatment within one month, compared to none who received only a psycho-educational session or very brief advice.<sup>72</sup> The intervention included personalized feedback of smoking-related information that was presented in both verbal and graphical formats, thus addressing the cognitive limitations of this population. Other creative approaches to help motivate smokers to seek treatment for tobacco dependence are needed.

**Table 3: Special Clinical Considerations in Treating Nicotine Dependence in Patients with Psychiatric Disorders**

<b>Consideration</b>	<b>Intervention</b>
<p>Complex system with broad range of psychiatric disorders, and varying levels of severity and functional impairment of the disorder</p>	<p>Tailored interventions which address the mental health needs</p> <p>Tobacco treatment provided by mental health professionals</p> <p>Availability of treatment services for all clients</p> <p>Range of services to meet different cognitive and motivational needs</p>
<p>High severity of tobacco dependence</p> <p>Patients tend to smoke more than 25 cigarettes per day (heavy smoking) and have high nicotine withdrawal symptoms</p>	<p>Place extra emphasis on use of NRT or bupropion for treating tobacco dependence</p> <p>Consider use of higher dose or combination medication treatment</p>
<p>Mental health treatment culture tends to support tobacco use as a form of social interaction, and to reward staff and patient with smoking breaks</p>	<p>Eliminate smoking breaks and institute fresh-air breaks</p> <p>Educate health care staff about its role in promoting healthy behaviors</p> <p>Eliminate staff smoking with patients</p> <p>Provide tobacco dependence treatment for mental health treatment providers</p> <p>Provide alternate recreation and other social outlets for patients and providers</p>
<p>Potential for some medication toxicity during early abstinence</p>	<p>Consider adjusting medication dosages during early abstinence</p> <p>Coordinate tobacco dependence treatment with mental health treatment providers</p>
<p>Smoking is prevalent in and around mental health residences, hospitals, and treatment facilities</p>	<p>Eliminate the sale of tobacco in mental health hospitals and treatment facilities</p> <p>Consider tobacco-free grounds policies that restrict smoking in the vicinity of treatment sites</p> <p>Institute tobacco-free housing options for non-smoking and quitting clients</p>

*Table 3: Continued*

Consideration	Intervention
<p>Low and/or fluctuating motivational levels and lack of acknowledgement of tobacco dependence as an acute issue</p>	<p>Consider motivational enhancement strategies for those with low motivation</p> <p>Incorporate long-term treatment planning approaches for addressing tobacco dependence</p>
<p>Cigarettes seen by patients and providers as the only pleasure or comfort</p>	<p>Include in treatment developing alternative sources of pleasure and strategies for mood management</p> <p>Use empowerment strategies to educate clients that they should strive for greater quality of life and tobacco-free lifestyles</p>
<p>Concerns from patients and providers that psychiatric symptoms will worsen and/or patients will be unable to use tobacco medications safely</p>	<p>Educate patients and other providers</p> <p>Monitor psychiatric symptoms closely, especially mood symptoms</p> <p>Consider concurrent use of appropriate psychotropic medication</p> <p>Educate about safety of tobacco treatment medications, even in the context of some smoking</p>
<p>Patients and providers often believe that tobacco dependence should be treated only after treating other substance abuse and psychiatric disorders have remitted</p>	<p>Delay treatment only during crises or when psychiatric instability interferes with treatment</p> <p>Use long-term chronic disease model to intervene at all opportunities</p> <p>Provide educational and motivational interventions early in treatment</p>
<p>Patients with psychiatric disorders may experience more intense symptoms of craving and withdrawal</p>	<p>Discuss strategies for managing craving and withdrawal symptoms with psychosocial techniques</p> <p>Use medications aggressively to treat craving and withdrawal</p>

## **Timing of the Intervention**

A very important question in treatment planning for this population of veteran smokers is the issue of when to time a quit attempt. Behavioral health clinicians frequently express concern that tobacco abstinence will worsen mental illness or jeopardize recovery from other substances. Although there is no definitive answer to this question, studies suggest that tobacco treatment does not jeopardize recovery from the abuse of other substances, and may even improve the outcomes for other substance use disorders.<sup>73, 74, 75</sup> In fact, there is growing evidence to suggest that many patients receiving drug and alcohol treatment are interested in receiving simultaneous smoking cessation treatment.<sup>76, 77, 78, 79</sup> A recent study by Joseph and colleagues comparing the timing of tobacco dependence treatment in the context of substance abuse treatment, showed little difference between those who received concurrent tobacco treatment and those for whom treatment was delayed for six months after initiating intensive addictions treatment.<sup>80</sup> Both groups had a comparable number of quit attempts, point prevalence smoking abstinence at 12 months, intensity of intervention, and use of NRT. The overall quit rates were also comparable to those of other types of smokers receiving nicotine dependence treatment (about 18 percent achieved abstinence at one year).

It is similarly unclear whether nicotine dependence treatment should be timed to coincide with a specific stage of psychiatric disorder recovery. At present, there is little other than clinical judgment to guide this decision.<sup>81</sup> Smokers with a history of depression who abstain from smoking are at significantly increased risk of developing a new episode of major depression at three and six months after treatment, and many smokers develop symptoms of depression during a quit attempt.<sup>82, 83</sup> Studies have yielded conflicting results about whether depressed smokers experience greater difficulty in quitting during a given quit attempt.<sup>84, 85</sup> A recent meta-analysis, however, showed that lifetime history of major depression does not appear to be a risk factor for failure in smoking cessation treatment.<sup>86</sup>

## **Pharmacotherapy**

Medications for treating nicotine dependence are first-line treatment options for all smokers. Six medications are approved by the Food and Drug Administration (FDA) for nicotine dependence and are considered by all treatment guidelines as first line treatments.<sup>87, 88</sup> These six medications include five nicotine replacement medications (i.e., patch, gum, spray, lozenge, and inhaler) and bupropion SR.

The VA can ensure that all FDA-approved tobacco dependence treatment medications are available on the national formularies and that medications are available without excessive restrictions that create access barriers for patients. Most reports have found the various nicotine replacement therapies used in the general population to be equally effective, although the combination of NRT and bupropion SR, or multiple NRT medications may improve outcomes, especially with heavier smokers.<sup>89, 90</sup> Supplementing the patch with a second nicotine product may be helpful in allowing patients to titrate their nicotine dose based on the presence of

withdrawal symptoms and may be more effective than the patch alone. Although not FDA-approved at present, these combinations are recommended in the Public Health Service (PHS) guidelines.<sup>91</sup> All of the tobacco treatment medications have low abuse liability, and are similar in their effects on nicotine withdrawal, urges to smoke, abstinence rates, and patient satisfaction.<sup>92, 93</sup> Although pharmacotherapy can be effective alone, success rates increase when medications are combined with psychosocial treatment.<sup>94, 95</sup>

While research on using medications in this population is limited, the clinical experience of experts in the field suggests that the use of NRT and bupropion medications in tobacco dependence treatment for this population is very important.<sup>96, 97</sup> Clinical practice should consider the particular issues associated with a specific psychiatric disorder, the current psychiatric medications that are best suited to treat the problem, and the potential for interactions between the medications and tobacco use. Standard treatment regimens should be modified as needed to incorporate necessary adjustments and increases in medications and/or psychosocial treatments to effectively treat both disorders simultaneously. Bupropion is effective for smoking cessation for people with and without a history of depression or alcoholism,<sup>98</sup> and smokers with depression can benefit from receiving monotherapy with bupropion SR, based on its two FDA-approved indications. The nicotine patch is equally effective in smokers with and without a history of alcoholism.<sup>99</sup> Smokers with schizophrenia appear to be able to stop smoking, but overall quit rates are about half those of the general population of smokers.<sup>100, 101</sup> The nicotine nasal spray may be a promising approach for smokers with schizophrenia and schizoaffective disorder and may modestly improve some selected aspects of cognitive functioning in schizophrenia.<sup>102, 103</sup>

When selecting a medication to use in treating tobacco dependence among smokers with psychiatric disorders, one needs to consider factors such as cost, patient preference, and prescription versus over-the-counter status. Compliance appears to be highest with the patch, which is easiest to use and well tolerated. This may make its use preferable in patients with serious mental illnesses. It is less helpful for immediate craving and thus, in clinical practice, it is frequently administered with the nicotine gum, inhaler, or nasal spray. Combinations of bupropion SR and nicotine replacement are being investigated for added efficacy. It is necessary to monitor psychiatric medication side effects during changes in tobacco use, and consideration must be given to the effect of quitting smoking on psychiatric medication blood levels, side effects, and symptoms. When smokers initially abstain from tobacco, rapid shifts in blood levels of medications can occur and there is a risk of increased side effects if the medication dosage is not adjusted.<sup>104</sup> Polycyclic aromatic hydrocarbons (tars) in tobacco smoke induce the hepatic metabolism of medications that are metabolized through the cytochrome P450 enzyme CYP1A2, including many antipsychotics, antidepressants, and anxiolytic medications.<sup>105, 106</sup> Of note, nicotine is not metabolized through the 1A2 isoenzyme like the other components of tobacco smoke, and therefore, it does not have a clinical effect on changing medication blood levels. Nicotine is metabolized by the CYP2D6 isoenzyme. Induction of CYP1A2 results in the increased metabolism of medications and subsequent lowering of blood levels in smokers taking medications such as haldol, prolixin, thorazine, clozapine, and olanzapine.

## **Psychosocial Treatments**

Psychosocial treatments for nicotine dependence are among the first-line treatments in recent practice guidelines.<sup>107, 108</sup> Combining psychosocial and pharmacological therapies increases abstinence rates by 50 percent when compared to either intervention alone; however, most patients' quit attempts have been made without either, and those who get treatment usually only receive medication treatment since psychosocial treatment is far less available.<sup>109</sup> The psychosocial treatments include motivational enhancement and cognitive behavioral therapies, such as social skills training, stimulus control techniques, and relapse prevention. These strategies are designed to increase skills and motivation to quit, and to provide support and education. Psychosocial treatment can range from very brief, single-session interventions to multi-session individual therapy. Though brief interventions can be effective, there is a strong dose-response relationship between the intensity of counseling and its effectiveness. Psychosocial interventions have been successfully adapted for smokers with psychiatric disorders, including schizophrenia,<sup>110, 111, 112</sup> depression,<sup>113, 114, 115, 116, 117</sup> and substance use disorders.<sup>118, 119</sup>

The VA Public Health Strategic Health Care Group, in collaboration with the Northwest Network Mental Illness Research, Education, and Clinical Center and the Center of Excellence in Substance Abuse Treatment and Education in Seattle, Washington, has developed and promoted a targeted brief smoking cessation intervention for use as a standard component of all VA mental health treatment sessions.<sup>120</sup> Recently, 53 VA clinicians from across the nation were trained to use the model in their daily practice with the expectation that they would educate other mental health professionals in their local facilities. This intervention involves educating psychiatric patients about how smoking affects their psychological health, improvements that can be expected following smoking cessation, and healthier strategies than smoking to manage emotional distress. Successful adaptation involves blending traditional mental health interventions with tobacco dependence treatments, while addressing the unique problems associated with specific psychiatric disorders. More VA initiatives are needed for other sub-types of smokers with psychiatric disorders.

Other types of tobacco dependence treatments in the community include telephone-based or internet-based interventions. The VA has an opportunity to develop and test these approaches. Almost nothing is known about the potential role or benefit of internet or telephone-based tobacco dependence treatment for this population. Real-world limitations could include lack of stable telephone service, reduced access to personal computers, and transient homelessness. These techniques may work better for less severe mental illnesses and addictions, although interestingly, we have found that some paranoid clients prefer internet groups over clinic groups. Because these services are often brief or time-limited, and not tailored to mental illness, they will likely never make a significant impact on reducing tobacco use in this group. There is limited information about the extent to which smokers with psychiatric disorders are accessing the internet or phone-line services or whether these interventions are effective for this group. The Quitcenters have found that about 50 percent of their patients have a history

of a psychiatric disorder and about 10 percent have a current psychiatric disorder for which they are receiving psychiatric treatment. These patients are primarily diagnosed with mild to moderate anxiety or depression disorders.<sup>121</sup>

**Table 4: Increase Clinical Tobacco Dependence Outreach, Treatment, and Staff Training**

- Train mental health and addiction treatment staff on how to screen, assess, and treat tobacco dependence.
- Mandate in-service or computerized training on tobacco dependence assessment and treatment for all psychiatrists and mental health clinicians. Incorporate motivation enhancement techniques in training materials.
- Develop integrated treatment models for mental health and addiction treatment settings
- Require that mental illness and addiction treatment programs have services for tobacco treatment at all levels of care.
- Assess the use and effectiveness of the computer-based smoking education reminder in mental health and addiction treatment settings.
- Require that tobacco dependence be included in treatment plans for all tobacco users with mental illness and/or addictions.
- Ensure that all FDA-approved tobacco dependence treatment medications are available on the national formularies and that medications are available without excessive restrictions.
- Create patient educational materials on tobacco use in veterans with mental illness and/or addictions for distribution on inpatient units, substance abuse programs, and mental health outpatient clinics.
- Initiate a more systematic effort to familiarize staff with existing VA web-based resources:
  - ◆ Healthier Feds: [www.opm.gov/healthier/feds/smokingcessation.asp](http://www.opm.gov/healthier/feds/smokingcessation.asp)
  - ◆ Office of Personnel Management: [www.opm.gov/ehs/smokgud3.asp](http://www.opm.gov/ehs/smokgud3.asp)

## Research Initiatives

The VA system not only provides health care services but also funds research that targets important issues for veterans. There is a need and a great opportunity to include studies that target veterans who smoke and have psychiatric disorders. The above review of clinical issues for this population clearly points out many gaps in the literature for many sub-types of smokers with psychiatric disorders. There is a need to encourage cross-agency initiatives for the target population within and between NIH, SAMHSA and the VA. The NIH roadmap for research was a step in this direction. Two recent requests for proposals (RFPs) from NIDA, NIMH, and NIAAA have focused on the target population. SAMHSA-NIH collaborations could help address the gaps in systems research on the target population by encouraging all NIH and SAMHSA RFPs to include tobacco as it relates to the primary goal of the initiative. For example, NIDA has placed greater emphasis on nicotine in projects addressing other drugs of abuse, thereby increasing the visibility of nicotine in its portfolio. The VA has recently

funded a large treatment study of veteran smokers with PTSD and more research of this nature is needed. With its active program in research, the VA is in an ideal position to begin to increase research funding and activity in this area.

***Table 5: Research Recommendations***

- Develop a set of guidelines to optimize clinical trials research for this population
- Increase VA research funding for this population
- Include tobacco use measures on all standard reporting and assessment batteries with this population
- Fund secondary data analyses examining the relationship between tobacco dependence and other psychiatric disorders

## **Program and Systems Change**

The VA has an opportunity to do local program interventions, VISN-wide interventions, and VA-wide interventions. Each level of intervention will require different approaches and should be included in an overall comprehensive VA plan.

Program Change: Better addressing tobacco in VA mental health and addiction treatment settings will require program and broader system change, including staff training, new policy implementation, development of harm reduction strategy options, and integration of motivation-based tobacco dependence treatment into existing treatment services. This will require that mental health and addiction treatment programs take ownership of nicotine dependence as a treatable DSM-IV diagnosis and begin to address tobacco in treatment. Program changes must occur at all levels of care and in all VA mental health and addiction treatment programs. The changes may range from minimal (including tobacco in the assessment and treatment plan and providing at least minimal patient educational information) to extensive (placing limits on staff and patient smoking or establishing tobacco-free buildings and grounds).

Effective steps for working with treatment programs and agencies to better address tobacco among smokers with psychiatric disorders have been developed and tested. Through consultations with more than 150 mental health and addiction treatment programs, the New Jersey Tobacco Dependence Program has refined its consultation service to help agencies to address tobacco, including some which have expressed a desire to have tobacco-free grounds.<sup>122, 123</sup> This program's ([www.tobaccoprogram.org](http://www.tobaccoprogram.org)) consultation service provides staff training activities and provides program consultation to mental health and addiction treatment facilities.<sup>124</sup> There are great opportunities for state and VA partnerships to share developed products.

A program consultation can help the treatment program with developing comprehensive tobacco dependence assessments, providing treatment and continuing care planning, providing patient education, making self-help groups such as Nicotine Anonymous available to patients and their families, providing nicotine dependence treatment, and addressing staff and volunteer use of tobacco. Other program issues include developing policies related to tobacco, changing documentation forms in clinical charts to include more tobacco-related questions, labeling smokers’ charts, not referring to breaks as “smoking breaks,” forbidding staff and patients to smoke together, providing patient education brochures, and providing NRT for all smokers confined to restricted units.<sup>125</sup> In table 6, we list the steps developed at the UMDNJ Tobacco Dependence Program for effectively addressing tobacco in mental health and addiction treatment settings. Although originally developed for use at the treatment program and agency levels, they are applicable to larger systems and can be adapted to addressing tobacco within the VA.

***Table 6: Steps for Addressing Tobacco  
within Mental Health and Addictions Services***

1. Acknowledge the challenge.
2. Establish a leadership group and commitment to change.
3. Create a change plan and implementation timetable.
4. Start with easy systems changes.
5. Assess and document in charts nicotine use, dependence, and prior treatments.
6. Incorporate tobacco issues into patient education curriculum.
7. Provide medications for nicotine dependence treatment and required abstinence.
8. Conduct staff training.
9. Provide treatment and recovery assistance for interested nicotine dependent staff.
10. Integrate motivation-based treatment throughout the system.
11. Develop Addressing Tobacco policies.
12. Establish ongoing communication with 12-step recovery groups, professional colleagues, and referral sources about systems change.

Source: Ziedonis and Williams, note 122.

**Tobacco-Free Grounds:** In an effort to better address the need for clean air, the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) requires that inpatient treatment be smoke-free and that treatment plans for smokers on these units include strategies for coping with the forced abstinence. Studies of the process of treatment units becoming tobacco-free have, in general, not found significant increases in rates of disruptive behaviors, discharges

without medical authorization, or the use of seclusion, restraints, or PRN medications.<sup>126</sup> In these settings, nicotine replacement medications can be very helpful in preventing nicotine withdrawal. A policy issue for the VA and other systems is whether or not to become totally smoke free, which includes addressing staff smoking and numerous other policy changes.<sup>127</sup> New Jersey is one of the few states with a licensure requirement that residential addiction treatment programs treat tobacco and have tobacco-free grounds and buildings. (North Carolina is another state that requires all its inpatient public addiction treatment programs to have smoke-free grounds). The definition of tobacco-free extends beyond requirements for clean indoor air, and refers to environments that are entirely free of tobacco smoke and tobacco use. Tobacco-free programs understand that any use of tobacco products is incongruent with a lifestyle free of addictive drugs and recognize the need to assist patients, employees, and volunteers at the facility to address their own tobacco use.

## **Tobacco Control**

In addition to local program interventions, the VA has the opportunity to do larger system interventions. Another possible area for expanding efforts to help smokers with psychiatric disorders is to include the Tobacco Control perspective. Most clinicians are unaware of the Prevention/Tobacco Control orientation outlined in Table 7.

*Table 7: Taxonomy of Tobacco Control Policies*

<b>Information and Education</b>	<b>Economic Incentives</b>	<b>Direct Restraints on Tobacco Use</b>
1. Require health warnings on advertisements	1. Increase tobacco taxation (e.g., excise taxes)	1. Restrict smoking in certain places (e.g., public places, workplaces, schools, hospitals)
2. Mandate educational programs --Schools --Mass media (counter-advertising)	2. Mandate insurance incentives --Premium price differentials (smoker-nonsmoker) --Cover smoking cessation treatment costs	2. Restrict distribution or sales --By age (minors) --By certain outlets (e.g., vending machines)
3. Restrict or ban advertising and promotion	3. Change tobacco crop price support system	3. Regulate production composition
4. Issue government reports (e.g., Surgeon Generals' reports)	4. Establish legal liability --Of purveyors/manufacturers --Of employers for environmental tobacco exposure	4. Ban manufacture, sale, or use
5. Require disclosure of constituents of tobacco products or smoke		

Source: Bierer and Rigotti, 1992: Modified from U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control: "Smoking control policies," in *Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report of the Surgeon General*. DHHS Publication No (CDC) 87-8411, 1989.

As Table 7 indicates, most tobacco control strategies have been broad-based and have targeted the general public. Treatment systems for mental health and addictions disorders have not embraced tobacco dependence, and many of these clients are unable to access traditional tobacco resources that target highly-motivated groups. More focused tobacco control efforts are needed for this population. Targeted interventions can be effective, and have been developed for other sub-groups such as minorities, adolescents, and pregnant women. Common tobacco control strategies include policy formation, taxation, and antismoking media campaigns. Examples might include policies mandating assessment and treatment; requiring managed care to fund tobacco dependence treatment and limiting smoking on treatment facilities and grounds; anti-tobacco messages tailored to these groups; and grass-roots advocacy by consumer and family groups and/or professional organizations. Since little is known about which of these will be most effective with this population, other strategies may be warranted. Smoking prevalence has been reduced in the general population since the 1960s, due in large part to tobacco control interventions; however this has not been the case for smokers with a mental illness or addictive disorders. Smokers with mental illness or addiction have been absent from tobacco control efforts by leading organizations. Similarly, this population of smokers is not included in current definitions of “priority” or “special” populations, but should be, based on a disproportionate consumption of tobacco, the lack of attention to the issue, and not having a natural advocacy base for this topic. Resource allocation and the definition of disparity groups should include target populations with a disproportionate amount of tobacco consumption.

***Table 8: Make Broader VA Policy Changes***

- |   |
|---|
| <ul style="list-style-type: none"><li>• Consider the role of tobacco control/public health at the VA for this population.</li><li>• Encourage Tobacco Advocacy Organizations to focus on tobacco control efforts in this area.</li><li>• Prohibit all staff from smoking with patients.</li><li>• Partner with other state and federal agencies.</li><li>• Support Clean-Air legislation.</li><li>• Consider removing all outdoor smoking kiosks from VA hospital grounds.</li><li>• Help provide tobacco dependence treatment for staff who smoke, including on-site employee assistance programs.</li></ul> |
|---|

## **Conclusion**

The VA health care system has the opportunity to lead the nation in helping both veterans and non-veterans with psychiatric disorders who smoke and are likely to die of tobacco-caused medical disorders. This will require increased awareness throughout the VA about the high rate and severity of tobacco dependence among psychiatric patients. About 25 to 40 percent of all veterans receiving treatment within the VA system have a psychiatric disorder and most of them are tobacco dependent. There is also a great need within the VA to train all mental health and addiction treatment staff on how to treat tobacco dependence. There is a great need to immediately address the issue of tobacco dependence among veterans with psychiatric disorders at the clinical, program, and systems levels, to fund more research to better understand the problem, and to develop and evaluate new interventions. Given the unique biological, psychological, social, and treatment setting factors that account for the increased risk for tobacco dependence in this population, the implications of these factors for clinical treatment must be considered. The VA health care system changes must be expanded across the 22 relatively autonomous VISNs. The VA is well positioned to develop, test, and promote innovative tobacco dependence treatment approaches to improve the health of veterans, but this work will have a ripple effect in helping behavioral health care practitioners nationally and internationally.

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## **Post-traumatic Stress Disorder and Smoking Cessation in Veteran Smokers**

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*This paper examines the available information on smoking cessation and post-traumatic stress disorder (PTSD). Unfortunately, there are only two available preliminary smoking cessation intervention studies for smokers with PTSD. The paper first reviews the definitions and epidemiology of PTSD, as well as smoking rates in the VA and veterans with PTSD. Next, it presents preliminary information regarding the relationship between PTSD symptoms and smoking. Finally, it presents various approaches to smoking cessation for PTSD smokers in the VA, and explores potential fruitful avenues for enhancing smoking cessation rates in this population.*

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### **Post-Traumatic Stress Disorder**

As defined in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV), PTSD is a set of specific symptoms that an individual develops following exposure to an extreme traumatic stressor (see appendix 1). Individuals with PTSD may be at increased risk for co-morbid anxiety disorders, major depressive disorder, somatization disorder, and substance-related disorders.<sup>1</sup> Furthermore, as part of the diagnostic criteria, individuals with PTSD experience significant distress and debilitating impairment in social and occupational functioning.

#### **Definition**

According to the DSM-IV, PTSD is comprised of six different diagnostic criteria.<sup>1</sup> First, the person must be exposed to a traumatic event, defined as an event during which the person experienced, witnessed, or was confronted with actual or threatened death, serious injury, or a threat to the physical integrity of self or others. Moreover, the individual's response must have involved intense fear, helplessness, or horror. The definition of a traumatic event is that the person must experience or witness actual or threatened death or serious injury or a threat of physical integrity to self or others and his or her response must be one of intense fear, helplessness or horror. PTSD symptoms in three clusters must be present, including reexperiencing, avoidance and numbing, and hyperarousal symptoms. The full symptom criteria are presented in Table 1. Symptoms must have been present for at least one month and lead to clinically significant distress or impairment in social, occupational, or other areas of functioning.

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## **Epidemiology**

It is estimated that 60 percent of people in the United States will experience at least one traumatic event in their lifetime, with approximately 8 percent of them developing PTSD. Approximately 30 percent of those affected will develop chronic PTSD.<sup>2</sup> Prevalence rate estimates for PTSD have varied widely as a function of a number of factors including trauma characteristics and study methodology (e.g., sampling and diagnostic methods); however, the overall data suggest that PTSD occurs in a significant proportion of individuals exposed to traumatic events. Davidson and Fairbank reviewed the epidemiological literature on PTSD, grouping studies into those based on community populations and those at high risk based on prior exposure.<sup>3</sup> Community-based samples yielded lifetime prevalence rates ranging from 1 to 19 percent. According to their review, prevalence rates for at-risk populations (e.g., Vietnam veterans, rape victims) ranged from 14 to 75 percent.

Among adults, the rate of lifetime PTSD for victims of sexual assault may be as high as 80 percent<sup>4, 5</sup> and PTSD rates for victims of physical assault have ranged from 23 to 39 percent.<sup>4</sup> Prevalence rates for adults exposed to disasters have ranged from 2 to 80 percent.<sup>6</sup> Epidemiologic data indicate that the lifetime rate for the development of PTSD is higher in women (10 to 12 percent) than in men (5 percent).<sup>2</sup> Saigh and colleagues conducted a review of epidemiological studies involving children exposed to traumas and found that prevalence rates varied widely within and between categories of stressors with exposure to war, crime victimization, and natural disasters or serious accidents being associated with the highest rates of PTSD (up to 75 percent, 71 percent, and 95 percent, respectively).<sup>7</sup> They noted that the high degree of variability in prevalence rates appeared to be a function of the severity of the stressor, time between exposure and assessment of PTSD, and methodological factors (e.g., sampling procedures and diagnostic methods).

In two of the Epidemiological Catchment Area (ECA) sites, several researchers<sup>8,9</sup> found that 33 to 47 percent of individuals retained the diagnosis of PTSD for more than one year. Therefore, chronicity of PTSD does not appear to be limited to the more severe treatment-seeking samples.<sup>10</sup>

## **Prevalence of PTSD in Veterans**

Rates of PTSD among veterans appear to vary according to combat zone exposure. Veterans from the Vietnam War era were the first population on which systematic and focused studies of PTSD prevalence rates were conducted. The National Vietnam Veterans Readjustment Study (NVVRS) was the most comprehensive of these studies. From this data,<sup>11</sup> as well as data from the National Comorbidity Study, the estimated lifetime prevalence of PTSD among American Vietnam theater veterans is 31 percent for men and 27 percent for women.<sup>2, 11</sup> In addition, another 22 percent of male and 21 percent of female veterans have had partial PTSD at some point in their lives. Thus, more than half of all male Vietnam veterans and almost half of all female veterans (about 1,700,000 Vietnam veterans in all) have experienced PTSD symptoms. Approximately 15 percent of all male Vietnam theater

veterans (479,000 out of 3,140,000) and 8 percent of all female Vietnam theater veterans (610 out of 7,200) are currently diagnosed with PTSD. In contrast, approximately 1 percent of Gulf War veterans from Desert Storm have been diagnosed with PTSD.<sup>12,13</sup> In the only published report to date examining rates of PTSD in veterans from the Afghanistan and Iraq wars, rates of PTSD in these populations was estimated to be 11 percent in Afghanistan era veterans and 15 to 17 percent in Iraqi era veterans.<sup>14</sup>

## **Etiology and Pathophysiology**

PTSD is defined in terms of etiology as much as by phenomenology. The disorder cannot exist unless the individual has been exposed to a traumatic event that elicits a response of helplessness, horror or fear. Trauma exposure is a necessary, but insufficient, requirement for diagnosis. Not all individuals who are exposed to traumatic stressors develop PTSD. Several researchers have suggested that there is a consistent and positive relationship between the magnitude of the traumatic event and the risk of developing PTSD, and this association is applicable to different trauma populations.<sup>15</sup> For example, in the St. Louis ECA study, PTSD rates were three times higher in wounded Vietnam veterans than in non-wounded veterans.<sup>9</sup> In the North Carolina ECA study, PTSD was much more likely to occur in sexual assault victims who were physically injured than in those who were non-injured.<sup>16</sup> Other studies have shown similar results in Vietnam veterans<sup>11</sup> and victims of a volcanic eruption.<sup>17</sup> In addition to the objective event characteristics (actual or threatened death or injury or threat to physical integrity), March concluded that cognitive and affective responses are also important.<sup>18</sup>

## **Expert Consensus Guideline Series: Treatment of PTSD**

The expert consensus guidelines for the treatment of PTSD are based on surveys of experts on psychotherapeutic and medication treatment approaches to PTSD.<sup>19</sup> However, there are few empirical studies that have evaluated combined approaches. The general guidelines for both medication and psychotherapy are as follows:

- With regard to whether to start with psychotherapy, medication, or a combination of both, the PTSD treatment guidelines vary depending on whether the individual is diagnosed with severe vs. mild or acute vs. chronic PTSD.
- In adults with mild acute PTSD, both psychotherapy and medication experts recommend psychotherapy first. In cases of mild chronic PTSD, psychotherapy experts recommend psychotherapy first, while medication experts recommend a combination of both medication and psychotherapy first. In adults with severe PTSD (acute or chronic), psychosocial experts recommend psychotherapy first, whereas the medication experts prefer combination treatment first.
- When a comorbid psychiatric disorder is present, experts recommend treating PTSD with a combination of both psychotherapy and medication from the start. In cases of mild substance abuse or dependence problems, the experts recommend that the treatment for both substance abuse and PTSD be provided simultaneously. In cases with more

severe substance abuse problems, it is recommended that either the substance abuse problems be treated first, or treatment for both substance abuse and PTSD be provided simultaneously.

## **Guidelines for Psychotherapy**

During the initial phase of treatment (first three months or until the patient is stabilized), the experts recommend that psychotherapy be delivered weekly, in 60-minute individual sessions. The most recommended psychotherapeutic techniques include anxiety management (i.e., relaxation training, breathing retraining, positive thinking and self-talk, assertiveness training, thought stopping), cognitive therapy, exposure therapy (*in vivo* and imaginal), play therapy, and psychoeducation. The experts make specific technique recommendations depending on which symptoms are more prominent. Psychoeducation is recommended as a second line option for all types of target symptoms, and is important in the treatment of every patient with PTSD. The type of comorbid disorder affects the choice of specific psychotherapy techniques as well.

For example, cognitive therapy is recommended when there is a comorbid mood or anxiety disorder or a cluster B personality disorder. Anxiety management is especially recommended when a comorbid anxiety disorder is present or there are substance abuse problems. Exposure therapy is also especially recommended when there is a comorbid disorder. The experts believe that techniques effective for PTSD when used alone (anxiety management, cognitive therapy, exposure therapy, and psychoeducation) are also effective when combined. Furthermore, combining techniques may be especially helpful for patients who have a complex presentation or who have had a poor response to treatment. The choice of which and how many of the techniques to combine should be based on clinical judgement and patient preference.

## **Guidelines for Medication Treatment**

Weekly medication visits are recommended for the first month, followed by bi-weekly visits thereafter. The newest antidepressants (selective serotonin reuptake inhibitors, or SSRIs, nefazadone, and venlafaxine), are usually favored regardless of the prominent symptom type. The experts also recommend the newer SSRIs for patients who have a variety of different medical conditions. The second line medication choices vary by type of disorder (see treatment guidelines for details). While benzodiazepines may sometimes be helpful in the short term, they must be used with caution in patients with current or past substance abuse problems. The expert panel recommended similar treatment for acute or chronic PTSD patients who do not respond to the initial treatment (< 25 percent reduction in symptoms). For patients receiving only one type of therapy (i.e., medication or psychotherapy alone), the experts offer two general treatment recommendations which may be helpful either separately or in combination: (1) add the type of treatment the patient has not yet received, and/or (2) switch to a different psychotherapy technique or to a different medication. The PTSD treatment guidelines recommend that clinicians use their clinical judgment in deciding whether to add a new treatment, switch to a different treatment, or do both. For a patient who is not responding to

one of the three preferred psychotherapy techniques (anxiety management, cognitive therapy, or exposure therapy), the experts recommend adding one or both of the other techniques.

When patients have had a partial response to treatment (25 to 75 percent of symptoms remaining), the guidelines recommend continuing the current treatment and adding another medication and/or additional psychotherapy. Similar to when there is no response, if a patient is having a partial response to one of the three preferred psychotherapy techniques, experts recommend adding one or both of the other techniques. Although helpful in guiding clinical decision making, it must be noted that many of the recommendations regarding sequencing and treatment combinations have yet to be empirically investigated.

## **PTSD and Tobacco Use**

### **Psychiatric Disorders and Cigarette Use**

Researchers have demonstrated a clear link between psychiatric disorders and cigarette use, which represents a major health risk for individuals with psychiatric disorders. It is estimated that individuals with psychiatric conditions consume 44 percent of all cigarettes sold in the United States.<sup>20</sup> Between 50 and 80 percent of those suffering from a mental illness smoke, whereas less than 40 percent of those who have never had mental illness smoke.<sup>20</sup> Although many psychiatric patients report repeated attempts to stop smoking, their efforts often result in failure. Smokers diagnosed with schizophrenia and depression, as compared to non-patient smokers who smoked at a comparable level, selected smoking as their preferred activity more often, perceived smoking as having more benefits, and believed they would require greater incentives to quit. This was true despite the fact that the diagnosed smokers recognized the same amount of negative outcomes associated with smoking as the non-patient smokers.<sup>21</sup> A complicating factor is the fact that alcohol and drug use disorders are more prevalent among people with a psychiatric illness,<sup>22</sup> and co-occurring substance abuse is a strong predictor of smoking status among psychiatric patients.<sup>23, 24</sup> Because both substance abuse and psychopathology have been linked to elevated rates of smoking among psychiatric patients, an important unanswered question is whether psychiatric diagnosis and other indices of psychopathology are independently associated with smoking after the effects of substance abuse are controlled. Prior research addressing this question has yielded mixed results;<sup>24-26</sup> however, a more recent study of a large and diverse psychiatric outpatient sample with a wide range of psychiatric conditions suggested that diagnosis and severity of illness contributed to increased smoking rates, even after controlling for the effects of substance abuse.<sup>27</sup>

### **Trauma, PTSD, and Smoking**

Individuals with PTSD are among those most at risk for smoking. Several studies indicate that individuals who have been exposed to a traumatic event are significantly more likely to start smoking<sup>4, 28</sup> and are more likely to be heavy smokers.<sup>20, 29, 30</sup> Thus, the effects of trauma

and associated PTSD symptomatology each appear to be related to both the initiation and maintenance of smoking, with PTSD representing a significantly higher risk factor than trauma exposure alone. A recent study by Breslau and colleagues<sup>28</sup> sheds more light on the nature of the relationship between trauma exposure, PTSD, and nicotine dependence. Both individuals with PTSD and trauma-exposed individuals without PTSD were at higher risk of nicotine dependence than were individuals without trauma exposure. However, the individuals with non-combat related PTSD had an increased odds ratio of 4.03 for smoking, whereas the odds ratio for those with trauma exposure was only 1.0.<sup>28</sup> In a population based prevalence study, Lasser and colleagues reported (based on a sample size of 4,411) that 45 percent of those diagnosed with PTSD were smokers.<sup>20</sup> This smoking rate was significantly different from respondents without mental illness (22 percent). Moreover, of the 14 psychiatric disorders sampled, individuals with PTSD had the fourth highest percentage of smokers, higher than those with social phobia, agoraphobia, panic disorder, major depression, dysthymia, panic attacks, simple phobia, non-affective psychosis, alcohol abuse or dependence, and antisocial personality. The prevalence rate of smoking in individuals with PTSD was only exceeded by generalized anxiety disorder, drug abuse or dependence, and bipolar disorder.

Prevalence rates of smoking among VA enrollees have been estimated at about 30 percent.<sup>31-34</sup> When standardized for sex and age to the 1999 U.S. population, the overall prevalence was 33 percent (37 percent for men and 29 percent for women). This is roughly 10 percent higher than the 1998 Behavioral Risk Factor Surveillance System data from the Centers for Disease Control,<sup>35</sup> which had a U.S. prevalence of 23 percent (25 percent for men and 20 percent for women). In addition, heavy smoking (a minimum of 21 cigarettes per day) was roughly twice as prevalent among VA users (7 percent overall, and 9 percent for men and 6 percent for women), as compared to the United States population prevalence of 4 percent (5 percent men, 2 percent women). As will be discussed in greater detail later, smokers with PTSD are among the least successful psychiatric populations with respect to smoking cessation.

## **Negative Affect and Cigarette Smoking**

Although there is growing evidence regarding factors that influence smoking and nicotine self-administration, there are significant gaps in identifying which subjective and behavioral nicotine effects are particularly reinforcing, and for whom they are reinforcing.<sup>37</sup> In self-medication models of substance abuse, the substance is thought to assist individuals in their efforts to regulate mood.<sup>38</sup> Virtually all smokers, at least in part, attribute their smoking to anxiolytic and sedative properties of smoking.<sup>39, 40</sup> Smokers reliably report that they smoke more when they are anxious, angry, stressed, or sad.<sup>41</sup> They also report the expectation that smoking will alleviate their negative moods and reduce their negative affect.<sup>42</sup> Negative affect may be a particularly salient antecedent for smoking in psychiatric populations.<sup>43</sup>

A review examining smoking, stress, and negative affect carefully presents the current evidence for an association between these variables across three developmental stages of smoking—initiation, maintenance, and relapse.<sup>44</sup> Since negative affect is more common in

psychiatric populations and a predictor of relapse to smoking,<sup>45</sup> the smoking of psychiatric populations may be more likely to be associated with negative mood. In addition, there is evidence that smoking withdrawal symptoms are related to idiosyncratic psychiatric symptomatology; for example, anxious smokers are more likely to have withdrawal symptoms related to anxiety.<sup>46</sup> This raises the possibility that not only are psychiatric symptoms related to craving and increased smoking, but that smoking withdrawal may lead to increased psychiatric symptoms.

Several somewhat discrepant lines of evidence regarding the association between smoking and affect have emerged. One line of evidence suggests that smoking may have an anxiolytic or antidepressant effect,<sup>47-49</sup> and laboratory studies have strengthened the hypothesis that stress and negative affect can lead to increased smoking.<sup>45,50</sup> Conversely, a second line of evidence suggests that smoking may exacerbate negative affect. For example, smoking and nicotine administration have been associated with increased distress<sup>51</sup> and the development of panic attacks.<sup>52,53</sup> In a longitudinal study with adolescents, initiating smoking was associated with increased incidence of psychological problems three years later. Specifically, smoking at age 18 increased the risk of anxiety and depressive disorders.<sup>54</sup> A third line of evidence, consistent with a self-medication model, has hypothesized that smoking allows affect to be actively controlled and managed, and thus possibly lessened.<sup>55</sup> For example, Perkins<sup>56</sup> has suggested that nicotine's subjective effects are related to the person's pre-smoking state and the reinforcing effects of nicotine may come from a normalized mood, rather than from a single mood-altering effect.

Although these studies represent seemingly discrepant findings, Gilbert has asserted that the effect of smoking on mood state is a function of both situational demands and biologically based individual differences in personality, psychopathology, and cognitive ability (i.e., situation X trait adaptive response model – STAR).<sup>57</sup> For example, whereas nicotine may serve to modulate or alleviate negative affect in many instances, in other contexts such as arousal associated with fear or traumatic memory, nicotine may maintain specific symptoms. However, more information is needed to characterize the effect of nicotine on mood states as it relates to the complex interaction between individual and situation, particularly in psychiatric populations.

## **Assessment of Smoking in PTSD Patients**

To date, only a few studies have examined smoking specifically among individuals with PTSD. In a recent study, McFall and colleagues found that the nine-month abstinence rate for smokers who completed smoking cessation with their PTSD provider was 12 percent, while the abstinence rate of smokers completing smoking cessation with standard VA smoking cessation care was 3 percent.<sup>58</sup> These long-term point prevalence rates illustrate the need to identify risk factors and mechanisms that may lead to improved smoking prevention, intervention, and relapse prevention techniques in individuals with PTSD or trauma exposure.

Risk factors for smoking that need to be assessed and which have been documented in the research literature include negative affect, anxiety, PTSD symptomatology, and craving. PTSD is characterized by high levels of anxiety and PTSD patients report that smoking cigarettes reduces their anxiety. Our ambulatory data suggests that compared to non-PTSD smokers, negative affect and PTSD symptoms are significant antecedents to smoking among PTSD smokers.<sup>59</sup> Additionally, our laboratory data suggests that craving and distressing symptoms are decreased in smokers with and without PTSD after smoking a cigarette.<sup>10</sup>

## **Mechanistic Studies: Ambulatory and Experimental Results**

For the past few years, our research group has conducted a number of studies examining the association between PTSD and smoking, as well as smoking cessation efforts with this population. Recently, we began collecting data in carefully controlled experimental sessions to evaluate the effects of nicotine and non-specific behavioral effects of smoking on craving and PTSD symptomatology. We have coupled this work with a small-scale, placebo-controlled trial of bupropion for smoking cessation in PTSD patients,<sup>60</sup> a study of smoking topography by context in smokers with PTSD,<sup>61</sup> and a study examining the effect of smoking and PTSD diagnosis on ambulatory heart rate and blood pressure.<sup>62</sup> At present, we are also investigating the effect and possible mechanisms of smoking on affective modulation of acoustic startle response (ASR) and prepulse inhibition (PPI) in male and female PTSD smokers to provide complementary information regarding maintenance of smoking in this group.

Using ambulatory methods for one day of monitoring, we investigated the association between smoking and situational cues in 63 smokers with PTSD and 32 smokers without PTSD.<sup>59</sup> Generalized estimating equations contrasted 682 smoking and 444 nonsmoking situations by group status. Smoking was strongly related to craving, positive and negative affect, PTSD symptoms, restlessness, and several situational variables among PTSD smokers. For non-PTSD smokers, the only significant antecedent variables for smoking were craving, drinking coffee, being alone, not being with family, not working, and being around others who were smoking. These results are consistent with previous ambulatory findings regarding mood in smokers, but also underscore that in certain populations, mood and symptom variables may be significantly associated with *ad lib* smoking.

In a laboratory setting, the association between recalling neutral, stressful, and traumatic events with craving, affect, and PTSD symptoms in smokers with and without PTSD was evaluated.<sup>10</sup> One hundred thirty-seven smokers (87 PTSD and 50 non-PTSD) completed eight sessions. The first was a diagnostic session and the second was a script procedure to generate personalized trauma, stress, and neutral scripts. In the remainder of the sessions, the effect of script type X nicotine condition (nicotinized or denicotinized cigarette) on craving, affect and PTSD symptoms was evaluated. There was a main effect of script type across both groups for smoking craving, negative affect, and PTSD symptoms, with increased symptoms in trauma and stressful conditions. Responses were significantly higher in PTSD smokers. Smoking either a nicotinized or denicotinized cigarette resulted in decreased craving, negative affect,

and PTSD symptoms in both groups. A second script presentation elicited similar responses, suggesting that the ameliorative effect of having smoked a cigarette was short-lived.

An exaggerated startle response is one of the diagnostic criteria for PTSD and may help explain possible mechanisms related to maintenance of smoking in this group. The acoustic startle response (ASR) represents a reflexive response to a high intensity and abrupt auditory stimulus and is commonly measured as a change in EMG activity resulting from contraction of the orbicularis oculi muscle. The ASR is reduced in amplitude when it is preceded by a lower intensity, non-startling auditory stimulus (the prepulse). A primary advantage of using ASR and prepulse inhibition (PPI) is that the use of a physiological measure allows for data that are more “objective” and more readily quantifiable than self-report data. The exclusive use of self-report in PTSD patients has been a long-standing area of concern among researchers.<sup>63</sup>

PPI and ASR have been studied in individuals (not evaluated for psychiatric condition) pre- and post-smoking cessation and have been shown to predict successful cessation.<sup>64</sup> The effect of smoking and smoking withdrawal on startle and PPI in PTSD patients has not yet been characterized, but may supply potentially predictive information regarding smoking withdrawal in this high-risk population.<sup>65,66</sup> In a recent pilot study, we examined the effects of nicotine on PPI of the startle response in six PTSD and five non-PTSD smokers. Startle and PPI amplitudes were examined separately. Results showed a main effect of cigarette type, reflecting the fact that participants demonstrated less PPI after smoking nicotine cigarettes than de-nicotinized cigarettes. Although statistically non-significant, the group means indicated that amplitudes were higher in both cigarette conditions for PTSD smokers. We are continuing this line of research by evaluating ASR and PPI in smokers with PTSD with an emphasis on investigating possible attentional mechanisms of smoking by administering neurocognitive measures across nicotine conditions. The goal of this line of research is to inform the development of smoking cessation strategies in PTSD smokers by identifying the mechanism of smoking that may be present in smokers with PTSD.

## **Smoking Cessation**

### **Smoking Cessation Treatment**

The relative efficacies of smoking cessation components have been evaluated in meta-analytic studies.<sup>67</sup> Compared to no intervention and self-help, individual or group counseling increases the efficacy of smoking cessation rates twofold (from approximately 8 to 15 percent). Compared to no counseling, minimal counseling (<3 minutes), brief counseling (3 to 10 minutes) or longer counseling interventions (>10 minutes) increase the efficacy of smoking cessation intervention twofold. A longer duration of treatment (>8 weeks) resulted in a two- to threefold increase in efficacy compared to briefer durations. Odds ratios for use of nicotine replacement therapies range from 1.4 to 1.5, compared to control interventions. In general, more intensive interventions result in greater savings in cost per life-year, suggesting that greater spending on interventions yields more net benefit.<sup>68</sup> A combination of intensive

counseling and the nicotine patch was evaluated to be particularly beneficial in increasing cessation rates on a single attempt in general smokers (17 percent).<sup>68</sup> Although the rates of smoking associated with particular treatment components have been evaluated with general smokers, there has been little evaluation of their efficacy with high-risk sub-groups such as PTSD and trauma exposed individuals.<sup>69</sup> In addition, a meta-analytic review of 192 articles indicates that to date, gender and racial/ethnic status have been poorly documented.<sup>70</sup>

Emerging evidence suggests that the majority of individuals attempting to quit smoking will lapse within the first or second week after quitting and will subsequently relapse.<sup>71,72</sup> Brown and colleagues found that even with extensive preparation, 37 percent of participants lapsed on the planned quit date.<sup>73</sup> In our clinic, we have found that help-seeking veterans who currently smoke and are diagnosed with PTSD report a mean number of 22 quit attempts. These findings suggest that increased understanding of smoking relapse is needed. Although nicotine withdrawal might be expected to be the strongest predictor of early lapse and subsequent relapse, studies attempting to relate severity of nicotine-withdrawal symptoms to short-term smoking cessation outcomes have produced mixed results.<sup>74</sup>

Based on the National Comorbidity Study data, PTSD is associated with a lifetime smoking quit rate of 23 percent compared to a 42 percent quit rate in individuals without mental illness.<sup>15</sup> This rate is also third from the bottom in a ranking of quit rates associated with 13 mental disorders,<sup>15</sup> underscoring the importance of developing effective treatments for smoking cessation for patients with PTSD.

## **Smoking Cessation and Major Depressive Disorder**

Although the purpose of this paper is not to review the literature on smoking cessation and major depressive disorder (MDD), since PTSD is highly comorbid with MDD, and there is more research regarding smoking cessation and MDD than PTSD, this research area offers information regarding approaches that may be useful in investigating smoking cessation and PTSD.

In a recent meta-analysis, lifetime history of major depression did not appear to be an independent risk factor for cessation failure in smoking cessation treatment.<sup>75</sup> However, this review did not include sufficient information regarding smoking cessation in smokers with current major depression or recurrent major depression. Glassman<sup>76</sup> found that smokers with recurrent depression were at greater risk for relapse than were those with a single-episode history, and also found that those with lifetime depression and not on antidepressant medications were at significant increased risk of developing a new episode of major depression for at least six months.<sup>77,78</sup> The notion that a recurrent history of depression, compared to a single-episode depression, increased risk for poor outcome was supported in a study by Brown and colleagues.<sup>73</sup> In this study, the efficacy of mood management-smoking cessation treatment was compared to standard treatment in 179 smokers, all of whom had a lifetime history of depression. Among those who received standard treatment, history of recurrent depression (but

not single-episode depression) predicted relapse. Overall, smokers with recurrent depression who received mood management were significantly more likely to be abstinent at one year than were those who received standard treatment. In a study evaluating patterns of change in depressive symptoms during smoking cessation, Burgess and colleagues found that among smokers with an MDD history, there is substantial heterogeneity in patterns of depressive symptoms during quitting, and patterns involving increased symptoms (both rapid and delayed increasers) were associated with especially poor smoking cessation outcomes.<sup>79</sup>

The relevance of these study results in considering smoking cessation treatment in veterans with PTSD is high. First, based on the available evidence,<sup>79</sup> it may be the case that there is also substantial heterogeneity in patterns of psychiatric symptoms (including depressive and PTSD symptoms) during quitting in smokers with PTSD, but this needs to be studied. Second, since the majority of smokers with PTSD also meet criteria for recurrent major depression, training in mood management may be particularly useful in treatment of smokers with PTSD; however, this needs to be evaluated. To date, there have only been two published studies focusing on smoking cessation in smokers with current major depression.<sup>80, 81</sup> Although results of these studies suggest that smokers with current major depression can achieve similar abstinence rates as non-depressed smokers, it may be limited to short term abstinence or less severe depression. Thus, further investigations including smokers with current psychiatric illness need to be conducted.

## **Smoking Cessation and Psychotic Disorders**

There is a relatively extensive literature on smoking and schizophrenia, and aspects of this literature will be presented for considering fruitful areas of research in smoking and PTSD. In schizophrenia, the relationship between symptoms and smoking is complex. Compared to the general population, there are particular sub-types (paranoid, undifferentiated, and residual) that have significantly higher rates of smoking, whereas others (disorganized, catatonic) do not.<sup>82</sup> Frequency of smoking in patients with schizophrenia increases with increasing positive symptoms and decreases with increasing negative symptoms. Contrary to PTSD,<sup>83</sup> smoking initiation occurs in the vast majority of patients prior to, rather than following, disease onset.<sup>82</sup> Results from a recent study suggest that there is an interaction between type of psychiatric medication (e.g., atypical psychotic versus traditional antipsychotic drug treatment) and the efficacy of bupropion as a smoking cessation treatment, such that atypical anti-psychotic drug treatment enhanced smoking cessation response to bupropion.<sup>84</sup> As in the depression literature, these data from the schizophrenia and smoking literature underscore that the heterogeneity represented in the psychiatric population may affect initiation, maintenance, cessation, treatment response, interaction with co-morbid psychiatric disorder, interactions between medications and treatment response, relapse, and chronicity of smoking in other psychiatric populations such as PTSD smokers.

## **Smoking Cessation and PTSD**

As summarized by McFall and colleagues,<sup>58</sup> although pharmacological and behavioral treatments for nicotine dependence have proven efficacious in controlled clinical trials and these may be helpful in the treatment of PTSD smokers, there is general evidence in the VA system that these treatments are not routinely and consistently offered.<sup>85</sup> Only 17 percent of veterans who desire treatment reported having received assistance for their nicotine dependence in the prior year.<sup>86</sup> Research has shown that primary care providers only infrequently apply even brief, cost-effective smoking cessation interventions, even though the majority of smokers report wanting to quit.<sup>36, 86</sup> Evidence suggests that nicotine dependence treatments in patients with mental disorders is particularly neglected, as demonstrated by evidence that psychiatric patients received cessation counseling during only 38 percent of their visits with a primary care physician and 12 percent of their visits with a psychiatrist.<sup>87</sup> Furthermore, a recent study found that psychiatric inpatients ( $n = 250$ ) were not assessed or treated for nicotine dependence during their psychiatric hospital admission.<sup>88</sup> Only 1 percent of smokers were encouraged to quit during their hospital stay, nicotine dependence was unassessed, and smoking status was never included in the treatment plan. Unfortunately, the effectiveness of referring patients to VA smoking cessation clinics is reduced by poor patient compliance, with attendance rates as low as 13 to 14 percent.<sup>33, 89</sup> Moreover, these clinics are limited in their capacity to provide repeated treatment to large numbers of smokers who frequently relapse to smoking.

A recent study by McFall and colleagues evaluated the effect of integrating treatment for nicotine dependence into PTSD smokers' ongoing mental health care.<sup>58</sup> PTSD smokers were randomly assigned to practice guideline-concordant cessation treatment integrated with psychiatric care and delivered by mental health providers [Integrated Care (IC)], versus cessation treatment delivered separately from PTSD care by smoking cessation specialists [Usual Standard of Care (USC)]. IC subjects received smoking cessation intervention modeled after the brief clinical interventions for primary care practitioners published in Agency for Health Care Policy and Research (AHCPR) Clinical Practice Guideline for Smoking Cessation.<sup>cited in 58</sup> IC subjects received care by their PTSD clinic prescriber and case manager, and clinicians followed a manual that operationalized interventions for each session. Subjects received smoking cessation protocol medications (bupropion, NRT) in both the IC and USC conditions. The IC protocol required case managers to administer five individual behavioral counseling sessions on a once-weekly basis, plus one follow-up contact. After delivering the six core behavioral counseling sessions, the protocol required clinicians to assess smoking status periodically and reinstate cessation treatment for subjects who relapsed. Subjects randomized to USC were referred to the VA Puget Sound Health Care System Specialized Smoking Cessation Clinic.

IC subjects (12.1 percent) were more likely than USC subjects (3.3 percent) to stop smoking as measured by seven-day point prevalence abstinence at four, six, and nine months post-randomization, but the enduring abstinence group difference was nonsignificant. Stopping smoking was not associated with worsening symptoms of PTSD or depression. A

recent VA Cooperative Study (#519) has been funded to examine this issue with sufficient statistical power, and the large-scale study may provide additional opportunities to evaluate treatment components for smoking cessation in veterans with PTSD.

Steinberg and colleagues have carefully outlined psychosocial approaches that may be particularly beneficial in the treatment of psychiatric smokers for smoking cessation.<sup>90</sup> These include relapse prevention and motivational interventions. Steinberg and colleagues found that a 40-minute, one-time psychosocial intervention of motivational interviewing (including personalized feedback by the therapist highlighting the patient's individual issues related to tobacco) increased contact with the tobacco dependence treatment program within one month by 3 percent.<sup>90</sup> Considerations of the patient's psychiatric status are needed and may include difficulty in group administration settings, poor social skills, cognitive limitations, and low motivation.

The only available studies evaluating smoking cessation interventions for PTSD smokers are a small scale placebo controlled trial of bupropion,<sup>60</sup> and a larger scale study evaluating the effect of smoking cessation delivery by mental health providers who were also responsible for smokers' PTSD treatment.<sup>58</sup> In our study of bupropion,<sup>60</sup> 15 veterans with chronic PTSD who desired to stop smoking enrolled in a 12-week double-blind evaluation of bupropion SR or placebo. Ten patients received bupropion SR and five received placebo. Nine of the patients who received bupropion SR were already being treated with at least one other psychotropic medication. Eighty percent of patients receiving bupropion SR successfully stopped smoking by the end of week two, and six (60 percent) of these 10 maintained smoking cessation at the study endpoint (week 12). At the six-month follow-up, 40 percent of the patients (4 of 10) who received bupropion SR maintained smoking cessation. Further investigation of this preliminary data needs to be conducted, including examination of predictors of smoking relapse in this population.

Telephone counseling is an approach that has also not been specifically evaluated for smoking cessation in PTSD smokers. Telephone counseling protocols have substantial support for smoking cessation,<sup>91, 92</sup> and additional investigation of this approach as a treatment intervention component is warranted.

Smokers with trauma exposure or PTSD may potentially benefit from cue reactivity and coping skills training as part of a smoking cessation effort. Social learning and conditioning theories suggest that smokers are likely to have conditioned reactions to stimuli associated with smoking.<sup>50</sup> In heavy drinkers, it has been documented that cue reactivity is predictive of drinking.<sup>93</sup> Also in heavy drinkers, it has been shown that exposure to alcohol stimuli while preventing drinking may extinguish these conditioned reactions.<sup>94</sup> Cue exposure and coping skills training as part of treatment have been shown to result in a higher percentage of abstinent days and consumption of fewer drinks per day.<sup>95</sup> Our preliminary data analyses<sup>10</sup> suggest that cue exposure may be helpful in addressing smoking cessation in smokers with trauma exposure or PTSD. For example, since our preliminary data suggest that both PTSD

and non-PTSD trauma exposed smokers have significant craving increases in response to trauma-related stimuli, inclusion of these cues in cue exposure training could be beneficial in promoting smoking cessation efforts.

Smokers with PTSD or trauma exposure may also benefit from specific relapse prevention skills training. In a study of healthy smokers, individuals with relapse prevention training had superior rates of smoking cessation (41 percent) than individuals in a group discussion (32 percent).<sup>96</sup> Relapse prevention therapy consisted of three weekly group sessions in which participants role-played coping responses likely to be useful in situations they felt would be the most problematic for maintaining abstinence. In smokers, strategies for handling stress and anger and for coping when upset have been associated with level of intention to quit smoking.<sup>97</sup> Supportive counseling and mood management approaches,<sup>98, 99</sup> which have previously been found to increase smoking cessation rates, may also be useful in smokers with PTSD or trauma exposure. Smokers with heightened levels of anxiety sensitivity may smoke more often to manage negative moods and may be less able to tolerate early withdrawal symptoms, specifically during early stages of a quit attempt.<sup>73</sup> So, for example, it may be useful to begin mood management sessions before the quit date and to have additional intervention during the first two weeks of the quit date.

PTSD smokers may also benefit from stages of change feedback.<sup>100</sup> It may be useful to incorporate one-to-one motivational intervention, as this approach has shown modest improvements in smoking cessation rates in at-risk resistant smokers.<sup>101, 102</sup> An expert system intervention for smoking cessation may also be a component that could be useful in this population.<sup>103-105</sup> The expert system intervention for smoking cessation is a computer-based decision-making system designed to utilize smoker information to produce uniquely matched information and intervention. For example, in non-psychiatric smokers, interactive expert-system computer reports plus individualized manuals were the best, or comparable with the best, treatment at all follow-up periods for smokers at all stages of change.<sup>105</sup> However, there is no available data using the expert symptom intervention for smoking cessation in psychiatric populations. Although certain inconsistencies have been noted in the stages of change guided by the transtheoretical model of behavioral change,<sup>106,107</sup> the use of the processes by the general population of smokers has been linked to successful cessation.<sup>108,109</sup>

Length of treatment for psychiatric smokers, including those with PTSD, may need to be longer and more intensive. For example, Bellack and DiClemente<sup>110</sup> have developed a six-month treatment protocol for schizophrenics with comorbid substance abuse. It contains four modules focusing on social skills and problem solving, education about the causes and dangers of substance use, motivational interviewing and goal setting for decreased substance use, and training in behavioral skills for relapse prevention. The program involves 90-minute, twice-weekly sessions, and behavioral rehearsal and complex social repertoires such as refusing substance. Skill behaviors are divided into smaller behavioral elements for practice.

This treatment-adaptation model was developed to minimize the impact of the cognitive and motivational deficits associated with schizophrenia.<sup>110</sup>

Hall and colleagues have recently designed a study to examine a more intensive treatment approach, extended cognitive-behavioral therapy (ECBT) for smoking cessation, in smokers who are alcohol-dependent (T. P. Carmody, personal communication, August 24, 2004). This is a manual-based extended treatment being conducted at the Treatment Research Center at the University of California, San Francisco. It includes five 40-minute individual sessions scheduled at weeks 1-4, focusing on support, preparation for quitting, and issues related to the immediate post-quit period; and eleven 40-minute individual counseling sessions at weeks 6, 7, 8, 10, 12, 13, 16, 18, 20, 23, and 24, focusing on mood management, increased physical activity, motivation for quitting, social support, and management of withdrawal symptoms. The content of the proposed intensive intervention is based on the relapse prevention recommendations of the 2000 *Practice Guidelines*.<sup>67</sup> Although there are no published results to date, this approach will be valuable in evaluating the possible effect of intensive, prolonged treatment for smoking cessation in a psychiatric sample.

Predictor variables of dropout, initial abstinence, relapse, and maintenance are also an important area of study in PTSD smokers. There are a number of variables that could be fruitful to investigate. For example, initial ratings of self-efficacy have been shown to predict dropout,<sup>111</sup> and therapeutic alliance<sup>112-114</sup> has been shown to be a predictor of treatment participation and drinking behavior during treatment and 12-month post-treatment periods.<sup>115,116</sup> Please refer to the companion paper by Douglas Ziedonis for further information regarding smoking cessation and mental health/substance abuse.

As discussed earlier, smoking cessation interventions shown to be helpful in increasing sustained quit rates in other psychiatric populations (e.g., smokers with depression, smokers with schizophrenia) need to be evaluated with PTSD smokers. For example, a program developed by McFall and colleagues suggests that smoking in individuals with PTSD is a chronic condition, and cessation effects require ongoing support.<sup>58</sup> Although not yet evaluated in psychiatric patients, another potentially useful approach for smoking cessation in veterans with psychiatric disorders would be residential treatment. In a small sample of veterans who had failed in outpatient smoking cessation treatment, Green and colleagues evaluated a pilot four-day residential smoking treatment program conducted in a smoke-free environment with NRT and educational sessions. Six month quit rates were comparable to other medical therapies for smoking (26 percent), but were obtained in smokers who had failed the outpatient program.<sup>117</sup> In a large non-veteran sample of 438, residential treatment for tobacco dependence was found to be superior to outpatient treatment in some smokers who were moderately to severely nicotine dependent [at 12 months 45 percent abstinent for residential treatment, versus 23 percent for outpatient treatment, resulting in a significant OR of 3.04 (1.74-5.27, 95 percent confidence interval)].<sup>118</sup> This approach deserves additional empirical attention in psychiatric populations.

## **Smoking Reduction Approaches**

### **Benefits of Smoking Reduction**

The fact that many smokers continue to smoke despite the known health consequences of tobacco use suggests the importance of investigating alternative treatments to aid smokers. Smoking reduction (i.e., reducing the number of cigarettes smoked per day) may be an efficacious alternative strategy. This approach has been shown to be helpful for both smokers who are unable to quit smoking and for those who are unwilling to quit.<sup>119</sup>

Fagerström has suggested several reasons why tobacco smoking may be ideal for this reduction approach.<sup>119,120</sup> First, there is a good dose response relationship between smoking and health outcomes such that the less tobacco smoked, the greater the health benefit. Second, since smokers seek nicotine, providing them with a treatment during which they would have access to nicotine may be particularly appealing. Third, nicotine is comparatively safe.<sup>119, 120</sup>

Although few research studies have examined the health benefits of reduced smoking, the existing data seem to suggest that there are definitive health benefits, particularly when smoking is reduced by at least 50 percent. Rennard and colleagues for example, found that when smokers (with asthma or chronic obstructive pulmonary disease) reduce their cigarette smoking by 50 percent, there is a reduction in neutrophilia in bronchial lavage fluids, and a reduction in total inflammatory cells in distal lavage fluids.<sup>121</sup> Consequently, these smokers were able to reduce their inhaled steroid use by 11 percent. Wennike and colleagues noticed an improvement in both evening peak flow and bronchial reactivity after smoking reduction.<sup>122</sup> Fagerström and Hughes found a significant reduction in carbon monoxide (28 to 31 percent) in smokers who had used nicotine replacement therapy (NRT) to reduce the number of cigarettes consumed daily.<sup>120</sup> Hecht and colleagues found that a moderate reduction in levels of urinary metabolites of a tobacco specific lung carcinogen was achieved by a 75 percent reduction in smoking.<sup>123</sup>

### **Relationship Between Smoking Reduction and Future Cessation**

Several studies comparing smokers in active versus placebo NRT conditions have examined the efficacy of smoking reduction as an aid to smoking cessation. The results of these studies are summarized in Table 2. Another recent study, which improved upon previous studies by including a no treatment condition, found similar results.<sup>124</sup> In this study, Carpenter and colleagues<sup>124</sup> randomized 616 smokers currently uninterested in quitting to receive: (a) telephone-based reduction counseling plus NRT plus brief advice to quit, (b) motivational advice plus brief advice, or (c) no treatment. More smokers in the reduction (43 percent) and motivational (51 percent) conditions made a 24-hour quit attempt over six months than did smokers in the no-treatment condition (16 percent), but the two active conditions did not differ. Similarly, six-month abstinence rates were 18 percent, 23 percent, and 4 percent, respectively for each condition. Results from this study suggest that smoking reduction with NRT does not undermine cessation; rather, it increases the likelihood of quit-

ting to a degree similar to motivational advice and it also increases quit attempts. Conversely, Hughes and colleagues found that in a four-year study using the Community Intervention Trial for smoking cessation (COMMIT) with 1,410 subjects, 40 percent of the smokers had reduced their cigarettes at two-year follow-up, and 52 percent of these reported maintaining that reduction at four-year follow-up.<sup>125</sup> These results suggest that a substantial minority of smokers in the United States are able to reduce their smoking and maintain this reduction for long periods of time, and that the smoking reduction neither promotes nor undermines cessation.<sup>125</sup> Taken together, these studies suggest that smoking reduction may be a useful intervention for smokers who are not interested in quitting. Another important finding from these studies is that NRT and smoking did not result in any significant serious adverse events. Some researchers have suggested that FDA regulations currently prohibiting marketing of NRT for purposes other than quitting should be reconsidered.<sup>126</sup>

## **How to Implement Smoking Reduction**

There are several ways to implement smoking reduction: (a) elimination of cigarettes by increasing the interval between cigarettes;<sup>127-129</sup> (b) rank-ordering cigarettes to delete, beginning with the easiest,<sup>119, 120</sup>; or (c) delaying the first cigarette or moving the last cigarette forward.<sup>120, 121</sup> Fagerström suggests that smokers should take small steps toward achieving their goals.<sup>121, 122</sup> Furthermore, it may be useful to obtain CO levels to provide smokers with a concrete and immediately observable health benefit of reducing cigarettes.<sup>119, 120</sup> These strategies should be aimed toward the ultimate goal of reducing cigarette consumption by at least 50 percent (or <8 cigarettes per day), which, based on previous research studies, appears to be the gold standard. While these strategies may be effective on their own, using NRT and bupropion may also aid smoking reduction in the short-term<sup>130, 121</sup> and over periods of six months or longer.<sup>131-134</sup>

In summary, smoking reduction approaches are worth considering for several reasons. First, smoking reduction may work when other cessation strategies have failed. Second, it may be self-reinforcing in that it produces visible behavioral change. Third, it appears to lead to greater self-efficacy, which could increase subsequent quitting. In a study of gradual reduction as a method of cessation,<sup>135</sup> reduction increased self-efficacy to resist smoking, which was subsequently associated with increased cessation. Fourth, smoking reduction is fairly easy to implement.

## **Summary and Recommendations for Smoking Cessation Interventions with Individuals with PTSD**

PTSD is prevalent, particularly in help-seeking veterans, and it is a risk factor for smoking onset and maintenance. Most help-seeking veterans report not receiving desired assistance with nicotine cessation in the previous year, and psychiatric patients are infrequently treated for nicotine dependence during their routine mental health or primary care visits.

Future basic research regarding smoking behavior and psychiatric symptoms in psychiatric patient groups, including PTSD smokers, is needed. The association between PTSD symptoms and *ad lib* smoking in PTSD smokers<sup>59</sup> is consistent with previous laboratory findings in which exposure to trauma cues increased urges to smoke,<sup>59,136</sup> as well as with a study showing that people suffer from smoking withdrawal symptoms consistent with their psychiatric symptomatology.<sup>46</sup> These findings suggest that at least in some psychiatric populations, smoking may represent a form of self-medication of their psychiatric symptoms.<sup>44</sup> The detection of an association between symptoms and smoking may be more likely in psychiatric smokers because: (a) there may be disorder-specific symptom and smoking associations; (b) certain psychiatric subgroups may use smoking as a coping response; or (c) deliberately increasing the yield of highly symptomatic smokers of any kind may allow a symptom effect to be detected. However, these are simply possibilities; the mechanism of detection of this association in psychiatric populations needs further investigation.

Based on examination of the literature, several recommendations may be important in treating smokers with PTSD, many of which could apply to other psychiatric patients:

- Full access to guideline recommended smoking cessation treatment with ongoing monitoring and reapplication of smoking intervention after relapses.
- Full access to psychiatric treatment for their psychiatric symptoms.
- Access to more intensive treatment, particularly when an adequate trial of smoking cessation guideline recommended treatment has been conducted.
- Repeated application of smoking cessation approaches.

Several promising avenues for additional treatment approaches need investigation. These include intensive psychosocial therapy for tobacco dependence; residential smoking therapy<sup>117</sup> with long-term outpatient follow-up; and smoking reduction<sup>119, 120</sup> and treatment delivery by mental health providers.<sup>58</sup>

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***Appendix 1. Diagnostic Criteria for PTSD***

**A. Exposure to a traumatic event:**

The person has experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others. The individual's response consisted of intense fear, helplessness, or horror.

**B. Re-experiencing the traumatic event:**

The trauma is re-experienced in one or more of the following ways:

- (1) Intrusive distressing recollections of the event
- (2) Nightmares
- (3) Behaving or feeling as if the traumatic event was recurring (e.g., flashbacks)
- (4) Exaggerated emotional reactions to triggers that remind the person of the event
- (5) Exaggerated physical reactions to reminders of the event

**C. Avoidance and emotional numbing:**

The person persistently avoids stimuli associated with the trauma as evidenced by at least three of the following:

- (1) Avoidance of thoughts, feelings, or conversations related to the trauma
- (2) Avoidance of activities, places, or people that arouse recollections of the trauma
- (3) Difficulty recalling important aspects of the trauma
- (4) Diminished interest or participation in activities
- (5) Feeling detached from others
- (6) Restricted emotions
- (7) Sense of a foreshortened future

**D. Increased arousal:**

At least two of the following are present:

- (1) Sleep disturbance
- (2) Irritability or outbursts of anger
- (3) Concentration problems
- (4) Hyper-vigilance
- (5) Exaggerated startle response

**E. Symptoms are present for at least one month**

**F. The symptoms lead to clinically significant distress or impairment in social, occupational, or other important areas of functioning**

**Appendix 2. Randomized Clinical Intervention Studies for Smoking Reduction that Resulted in Smoking Abstinence <sup>119</sup>**

Study	Percent quit				Follow- up in weeks
	NRT	N	Non RT	N	
Bollinger et al., 2000	10	200	8	200	10
Carpenter et al., 2003	13	33	9	34	24
Etter et al., 2002	3	265	1	269	12
Haustein et al., 2002	10	193	8	192	52
Kralikova et al., 2001	19	157	9	157	52
Rennard et al., 2001	9	214	2	215	76
Tonnesen et al., 2001	15	161	5	59	16
Wennike et al., 2001	9	205	3	205	104
Batra et al., 2002	6	180	2	184	17

## **COMMENTARY ON MENTAL HEALTH AND POST-TRAUMATIC STRESS DISORDER**

Sharon Hall, Ph.D.\*

From the wealth of information contained in these two presentations, three things are abundantly clear:

First, we need to focus on co-morbid populations and their smoking. Both presenters reviewed the important work of Lasser and others indicating very high tobacco usage rates in individuals with mental disorders.

Second, we have an impressive armamentarium of tools that can be used in mental health settings and whose effectiveness has been demonstrated by numerous studies. The interventions include:

- NRT
- Bupropion
- Second line medications—nortriptyline and clonidine
- Psychological interventions

Third, we have a substantial knowledge base from which to adapt interventions to the special needs of psychiatric patients. As Dr. Ziedonis pointed out from his work with hospitalized patients, inpatient psychiatric hospitalization may be an excellent time to introduce tobacco cessation interventions. And as Dr. Beckham observed, computerized counseling has been shown to be useful in facilitating tobacco cessation and movement towards it in smokers not ready to quit. There are varying reports of readiness to quit among psychiatric patients, as in the general population, and use of such systems may well be successful. Preliminary data from our group at the University of California, San Francisco (UCSF), in an outpatient psychiatric clinic indicates this is the case.

Psychological interventions tested in the general population may be especially useful. For example, our group and others have tested a cognitive behavior therapy (CBT) intervention that is designed to deal with poor mood and which is especially useful for individuals with a history of depression. It seems like a reasonable next step to assume that it would also be useful for individuals who are currently depressed and individuals with post-traumatic stress disorder (PTSD), who are often co-morbid for depression.

In my opinion, psychiatric and mental health practitioners have the skills needed to implement these interventions, or could have them with minimal retraining. They already offer psychological interventions, such as general supportive counseling, CBT, and motivational

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interviewing. Adapting these techniques to nicotine dependence would just be a step away. Additionally, there are not a lot of drugs to treat nicotine dependence, learning about them is fairly straightforward. Five of them—the NRTs—have the same active ingredient, and bupropion (Zyban) is frequently used by mental health practitioners for other reasons.

In 1997, Zarin, Pincus, and Hughes wrote:

“Those who deliver mental health care often pride themselves on treating the whole patient, on ‘seeing the big picture’ and on not being bound by financial irrationality or by the biases of their culture; yet many fail to treat nicotine dependence. They forget that when their patient dies of a smoking-related disease, their patient has died of a psychiatric illness they failed to treat.”<sup>1</sup>

I like this quotation very much, for it raises important questions. Why is this still the case in most mental health settings? Given the needs and the extent of our knowledge, why has implementation been so slow? What can we do about it?

In addressing the problem, it is first necessary to understand the obstacles. There are many barriers, but among the most important are the following:

## **Financial Barriers**

In private pay systems, mental health practitioners may not be eligible to be reimbursed for smoking treatment (or might not have explored ways that they could be reimbursed). More important, however, is the fact that innovations in the field often come from research that is federally funded, particularly by the National Institutes of Health (NIH). There are other sources of funding, and the VA has its own merit review, Health Services Research and Development Service (HSR&D), and collaborative studies system, but it is the NIH that usually provides scientific leadership and is the major thought leader in this area.

Substance abuse treatment settings are ahead of mental health settings in integrating tobacco dependence treatment into the treatment package. The National Institute on Drug Abuse’s (NIDA) nationwide Clinical Trials Network implemented a trial of smoking cessation in substance abuse treatment. One major substance abuse treatment provider, Walden House, publishes a newsletter called the *Tobacco Free Press*. Recently, we held a conference in San Francisco on treating smoking in substance abuse treatment settings, and there will be a follow-up conference this fall. We heard reports from all over the country, but especially from New Jersey, about state and county policy changes that led to the implementation of smoking cessation treatment in substance abuse settings.

Perhaps one of the differences between mental health and substance abuse settings is that the largest funding agency for substance abuse, NIDA, was one of the first to recognize the gravity of the problem—perhaps because it was in the position to recognize an addiction when it saw one. NIDA has been the most likely source of funding on smoking and other comorbidities. In preparing this talk, I went on the NIH website called CRISP, and searched all

the combinations of nicotine and tobacco and cigarettes and mental health and psychiatric and co-morbidity that I could think of. About 90 percent of the grants were funded by NIDA. This linkage has not yet occurred with the primary funding agency for mental health, the National Institute of Mental Health. I couldn't find a single grant funding tobacco dependence and psychiatric issues by this agency. So, a major thought leader isn't participating.

Through its merit review and HSR&D research funding in treatment of smoking among psychiatric patients, the VA could be a leader in facilitating the shift in thinking that would make smoking cessation a routine part of treatment of veterans in the care of mental health professionals.

## **Educational Barriers**

I did an informal survey of some of my psychiatrist colleagues in clinical leadership positions. The lack of training is evident. Whether in medical school, in residency, or in graduate school, mental health professionals are not taught about nicotine dependence; generally, they are not taught much about addictions at all. Since people tend to conceptualize their discipline by what they learn in graduate school or residencies, and feel most comfortable in using techniques they learned at this time, the VA has the potential again to be a leader.

Many doctoral-level clinical psychologists, especially those coming from academic settings, complete their clinical training in VA medical centers, many of which are sites for psychiatric residency programs. I know that at the UCSF, much of the specialized training that residents receive in substance abuse is through our VA. I am less familiar with the training of nurses and social workers, but if tobacco dependence treatment, and especially its importance in co-morbid populations, was emphasized at their training sites, it would go a long way to changing practice both inside and outside the VA system.

Dr. Ziedonis mentioned the resistance of advocacy groups. In thinking about this, I realized that almost every disorder has an advocacy group these days, except perhaps, people addicted to illicit drugs and cigarette smokers. Certainly, educating advocacy groups is important; for the VA, educating veterans' organizations about the need to address tobacco addiction is especially important.

## **Stigmatization**

Stigmatization of people with mental illness manifests itself in a number of ways, including the three that follow.

The first is an expectation of differences. Those of us who do smoking cessation research have joined with our colleagues in mental health in a subtle sort of stigmatization by emphasizing differences and de-emphasizing similarities. We expect people with mental illness to be different—that is, not like us.

As one example, our group recently completed a study of a smoking cessation intervention in psychiatric patients in outpatient services at UCSF and three Kaiser Permanente sites. The study included any one who smoked at least a cigarette per day—they did not have to want to quit. We were comparing an innovative intervention with a control. The innovation consisted of counseling to increase readiness to quit using an expert system based on DiClemente and Prochaska's stages of change (SOC) model<sup>2</sup>—the idea being to move them along the stages, with the offer of one-to-one counseling and NRT when people reach the contemplation stage.

One of our first analyses was to look at the SOC levels in the clinic. We fully expected that more depressed people would be at earlier stages of change. This was not the case. Depression was uncorrelated with stage, and the sample looked a lot like a general population. My point here is that we went into the study expecting that these individuals would be different than the rest of the population on a crucial variable, and that was not the case. I am not saying that tailoring is not a good idea, nor that we should not address the uniqueness of this population. However, we might have progressed faster had we expected similarities and tested interventions that work in the general population, rather than tailoring them to a population that we expected to be different. In my opinion, we should emphasize what we have in common, and then think about tailoring.

A second, related way that stigmatization is manifested is through what I would call “catastrophizing.” Years ago, we feared that if we asked inpatients not to smoke, their symptoms would be exacerbated, or they'd leave, or worse. Many studies, including ones done at UCSF, showed that that was not the case. More recently, there has been concern about worsening of depressive symptoms, or relapse to major depressive episodes. The latter is still up for grabs, in my opinion; the existing studies are not entirely controlled or are misinterpreted, or they have such high and differential dropout rates that it is not possible to determine if this is the case.

The third way that stigmatization of mentally ill patients manifests itself is by focusing on the short-term. In dealing with any acute problem, there is always the tendency to ignore prevention. The possibility of suicide, crises in interpersonal relationships, substance abuse—these are survival issues that require immediate attention and tend to relegate treatment of other problems, such as smoking, to the background. On the other hand, the long-term benefits of smoking cessation are very clear. Even though people may sometimes have problems that need immediate attention, they are not always in crisis; they remain in the system, and this is the place where their problems—long term and short term—can and should be treated.

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<sup>1</sup> Zarin, DA, Pincus, HA & Hughes, JR. (1997) Treating nicotine dependence in mental health settings. *Journal of Practical Psychiatry and Behavioral Health*. July, 250-254.

<sup>2</sup> Prochaska, J. O & DiClemente, C. C. (1982) Transtheoretical Therapy: Towards an Integrative Model of Change. *Psychotherapy: Theory, Research and Practice* (19) 3 276-288.