

## CIGARETTE SMOKING AND SCHIZOPHRENIA: AN UNMET PUBLIC HEALTH BURDEN

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### Abstract

Despite some success in combating cigarette smoking in the general population, there has been little effort toward decreasing the rates of cigarette smoking in people with schizophrenia and other chronic mental illnesses. In addition to the financial burden on people with mental illness who tend to live on a limited fixed income, there is also a cost to society in the form of an added tax burden to support the medical care for cigarette smoking related medical sequelae. These medical sequelae are a major reason for the shorter life span of people with schizophrenia. Yet, there is still a reluctance to treat cigarette addiction aggressively in this population, despite there being a literature to support that people with chronic mental illness can tolerate quit attempts and can have moderate short term success. Caregivers in the field of mental health need to be educated to aggressively address this public health problem.

## Introduction

### The extent of the problem

Despite a decrease in the rate of smoking in the general population, the rate of smoking in people with schizophrenia continues to be high, It is estimated that persons with mental illness are responsible for 44% of the US tobacco market and that the mentally ill, of whom approximately 80 percent receive income benefits from the government, spend approximately 30% of that income on the purchase of cigarettes (1). As the price of cigarettes has risen over the past 20 years, the cost of this addiction has taken a larger and larger percentage of their limited monthly income. Other costs of smoking are shared by the tax payer in the form of government subsidies that pay for needed medical care and for the higher dosage of antipsychotic medications required by smokers who take antipsychotics. And, because they are on higher doses of medication, they are at risk of the emergence of side effects, if they stop smoking, even temporarily (2, 3). Of course the health risks to mentally ill smokers are significant in other ways. People with schizophrenia are more likely to suffer from morbidity due to smoking related illnesses because they are less likely to obtain preventative care and more likely to obtain treatment at later stages of illnesses. (4-6) It has been known for some time that the the mortality rate is higher in psychiatric patients generally(7-9), and in people with schizophrenia, particularly, who live on average 20 years less than those of the general population. (10-15). The majority of the increase is due cardiovascular causes, though respiratory related deaths are also elevated (12, 16). Some investigators believe that the excess mortality rate in this population is solely due to cigarette smoking, which therefore makes cigarette smoking a major public health problem in this population (7).

With the extent of the problem being so clear, why is then, that the rate of smoking continues to be so high in this population, a population that already suffers with greater than it's share of economic and health burden.

### **Reluctance of caregivers to address cigarette addiction**

There are many reasons given by treatment providers to not aggressively treating cigarette addiction in their severely mentally ill patients. Many assume that patients cannot tolerate quit attempts due to the stress of withdrawal leading to symptom exacerbation. Related to this idea is the belief that patients need to smoke as a way to manage their illness, the well-known self-medication hypothesis. (17-19). When in the 1990s, psychiatric hospital units passed smoking bans, it was assumed that there would be an increase in agitation on the units. In fact, this did not happen and subsequent studies over the next 20 years showed that patients could generally tolerate smoking cessation in the short term without symptoms exacerbation (20-22).

A more sophisticated form of this 'self medication' hypothesis posits that by smoking cigarettes, patients with schizophrenia are trying to correct an abnormality in their nicotinic acetylcholinergic neurotransmitter system in the brain. Although there is a evidence to support an abnormality in this brain system (23, 24) there is little evidence to support that patients who are chronic smokers derive clinically meaningful cognitive benefits from their smoking. There is also little evidence that areas of cognitive impairment specific to schizophrenia, such as visual and working memory and executive function, display any specific improvement through either acute or chronic nicotine administration.

Even if there are some benefits from smoking, the benefits do not outweigh the risks that people with schizophrenia incur on as smokers. The rationalizations that care providers use to ignore this addiction are not compelling. Psychiatrists need to accept that people with schizophrenia can tolerate quit attempts and can be successful.

### **Treatment of cigarette addiction**

Following the onset of smoking bans in hospitals in the early 1990s a large literature has accumulated showing that stable patients with schizophrenia can tolerate cessation attempts without overall worsening of their illness and can have moderate short-term success in smoking cessation (22, 25-33). A thorough review done by the Cochrane Collaboration in 2011(34) found adequate evidence to support the role of bupropion but not other cessation treatments. They reviewed all randomized controlled trials (or quasi-randomized) of adult smokers with schizophrenia or schizoaffective disorder both pharmacological and nonpharmacological between the years of 1998 and 2009. With respect to symptom exacerbation, the Cochrane review concludes that neither bupropion nor the achievement of cessation was associated with worsening of positive, negative symptoms or depressive symptoms. Another groups meta-analysis concluded that bupropion improved the chance of successful 4 week abstinence by almost 3 times compared to placebo The American Journal of Psychiatry Clinical guidelines (35) , as well as the Updated Treatment Recommendations from 2009 from the Schizophrenia Patient Outcomes Research Team (PORT) (36) both recommend that people with schizophrenia who want to quit smoking should be offered bupropion with group support/ education.

There is not sufficient evidence to date to make clear recommendations regarding group support or NRT usage. However, subanalysis from a number of studies have revealed that NRT usage was associated with better cessation outcomes and that group support participation was associated with better NRT adherence. One study also showed that quitters who continued NRT had a significantly improved chance of ongoing cessation at 6 months compared to placebo(29). This finding is potentially important, as the literature consistently reveals a high rate of relapse to smoking by six months, so any strategy that would improve long-term outcome would be beneficial. It may be that people with schizophrenia require longer duration of structured support along with NRT to be successful.

The use of varenicline now considered the most effective smoking cessation pharmacotherapy in the general population (37-39), has been limited in people with severe and persistent mental illness due to concerns in the general population of case reports of psychiatric worsening, including agitation and suicidality. There is ongoing debate while the evidence in large population studies and meta analysis are reviewed. An FDA trial will be completed in 2017. However a literature is accumulating to support its safe use in people with chronic schizophrenia. Between the case reports (40-44), small case series (45-47) and larger clinical trials (48-51) there have been approximately 240 people exposed to standard dose varenicline in a study setting. Not all of these protocols were smoking cessation studies, but the issue of varenicline tolerability can be assessed. Though there are case reports of clinical worsening, none of the larger clinical trials reported worsening of depression, anxiety or

suicidality(52). In course these are small “N” studies and unlikely to track low frequency events, such as attempted or completed suicide. The side-effects commonly observed, nausea, vivid dreams, insomnia and mild anxiety, were similar to those in the general population. As in the general population, the efficacy of varenicline for smoking cessation is greater than for other pharmacotherapies (52-54). Though the rates of success are not as robust as in the general population, and though the data is limited to only short-term cessation rates, it appears that there is a greater chance for people with schizophrenia to stop smoking with the use of varenicline.

## Conclusion

The trend in the general population guidelines now favors a three pronged approach using either bupropion or varenicline plus NRT plus some form of education/ support. Though the data in the schizophrenic population is limited, it is reasonable to assume that in this population known to have a more difficult time at successful cessation, a three pronged approach would be indicated. The general population studies reveal that people can tolerate combinations pharmacotherapy (55) without significant side-effects. Therefore, it appears likely that the use of “triple therapy” in stable, chronic psychiatric patients in ongoing treatment is a safe and efficacious approach. With the now solid evidence that these patients want to quit, can tolerate quitting, and can tolerate the pharmacologic agents available to help them be successful the psychiatric field as a whole must aggressively address this public health issue.

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