

Should we encourage smokers with severe mental illness to switch to electronic cigarettes?

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Although smoking rates in Australia have declined significantly in recent years, the very high smoking prevalence in patients with severe mental illness (SMI) has remained unchanged (Cooper et al., 2012). In all, 70% of patients with schizophrenia and 61% of patients with bipolar disorder smoke, compared to 16% of those without mental illness (Cooper et al., 2012). People with SMI have substantially poorer physical health and a reduced life expectancy by 15–20 years compared to the general population. Smoking is the leading cause of this health gap.

Smokers with SMI are just as motivated to quit as other smokers and most make repeated attempts to do so (Cooper et al., 2012). However, quit rates are low in this population due to a range of factors, including heavier smoking, more severe nicotine dependence, the beneficial effects of nicotine, comorbid substance use and environmental and social factors that reinforce smoking (Sharma et al., 2016). Additional approaches are urgently needed to reduce the devastating consequences to physical and mental health in those who are unable or unwilling to quit with conventional treatments. One novel option is switching to long term use of electronic cigarettes (e-cigarettes) (Sharma et al., 2016).

Smokers with SMI who are unable to quit smoking could benefit from long-term substitution of combustible tobacco with 'clean' nicotine product such as e-cigarettes (tobacco harm reduction). E-cigarettes deliver the nicotine to which smokers are

addicted without the products of combustion that cause almost all the adverse health effects of smoking (Royal College of Physicians [RCP], 2016). E-cigarette vapour contains low levels of toxins, but the Royal College of Physicians estimates the long-term risk from e-cigarette use (vaping) as likely to be no more than 5% of smoking tobacco (RCP, 2016). Similar harm reduction strategies are widely used for other harmful behaviours, such as the opiate substitution therapy and clean needle exchange to reduce risks from intravenous opiate use.

E-cigarettes also have the added appeal of simulating the behavioural, sensory and social aspects of the smoking ritual. Many studies have shown that nicotine-containing e-cigarettes alleviate cravings and nicotine withdrawal symptoms and large population studies from Europe and the United Kingdom suggest that e-cigarettes are helping many smokers to quit combustible tobacco.

The limited studies so far suggest that e-cigarettes can also help people with SMIs to stop or substantially reduce their smoking without serious adverse effects, even in those not ready to quit (Sharma et al., 2016). Further trials are underway to test the effectiveness of e-cigarettes in smokers with SMI. Switching completely to e-cigarettes is likely to lead to significant physical and mental health benefits, but there is also evidence that even partial substitution (dual use) may produce some health improvements. Those who reduce smoking while using e-cigarettes are more likely to

quit smoking altogether in the long-term, as is the case with long-term use of nicotine replacement therapy.

E-cigarettes appear to be an appealing option for smokers with SMI. Research suggests that smokers with SMI are more likely to have tried e-cigarettes and are more likely to be current users than other smokers (Cummins et al., 2014). Adherence to treatment is more likely if the products used are acceptable to patients. According to the Smoking Toolkit study (United Kingdom), e-cigarettes are now the most popular aid to quitting in the United Kingdom.

The continued use of nicotine in e-cigarettes may also benefit specific illness-related deficits in SMI by augmenting the release of dopamine and several other neurotransmitters. Nicotine modestly improves

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attention, working memory and sensory gating which are specifically impaired in schizophrenia (Sharma et al., 2016). Nicotine may counter some of the negative symptoms of SMI such as amotivation, withdrawal and blunted affect and may also help to ameliorate the sedation from antipsychotic drugs. These effects may help improve social interaction and reduce isolation which are otherwise difficult to treat. Like cigarette smoking, e-cigarette use can help to transiently improve anxiety and mood, alleviate boredom and can facilitate socialising.

There is some early evidence that using nicotine-containing e-cigarettes may reduce the post-cessation weight gain which is of particular concern for a population who already have higher cardiovascular risk from weight gain caused at least in part by some anti-psychotic medications (Glover et al., 2016).

Switching from smoking to e-cigarettes can also enable a reduction in the dose of some antipsychotic medications, notably clozapine and olanzapine. Tobacco smoke contains polycyclic aromatic hydrocarbons (PAHs) which induce the metabolism of these and some other psychotropic medications. PAHs are not present in vapour, or are only present in trace amounts, so e-cigarette users generally require a dose reduction after switching from smoking (Sharma et al., 2016).

E-cigarettes can also help to reduce financial stress and social inequities in SMI. Using e-cigarettes can be considerably cheaper than smoking and can lead to substantial cost savings. Most people with SMIs are on limited, fixed incomes and spend almost 30% of their income on smoking instead of, for example, on a healthier diet or social activities.

E-cigarettes may be especially beneficial in smoke-free psychiatric facilities. Allowing e-cigarette use in designated areas and outdoor spaces could provide some comfort for distressed smokers without exposing patients, staff and visitors to second-hand smoke. E-cigarettes are used in

some mental health facilities in the United Kingdom, and the approach is supported by the majority of smokers and staff. Concerns about patients using e-cigarettes for self-harm or to administer other psychoactive substances can be minimised by using prefilled, disposable and tamper-proof models specifically designed for this setting.

Considering the potential to reduce the devastating burden of tobacco-related disease in people with SMI, we believe there is strong justification for amending the laws of Australia and New Zealand to allow improved access to low concentrations of nicotine for use in e-cigarettes. While nicotine-free e-cigarettes and refill liquids are readily accessible, nicotine liquid is not available for purchase except illegally through an unregulated black market. In Australia, legal access requires a medical prescription to allow importation from overseas under the Therapeutics Goods Administration's Personal Importation Scheme, or to have nicotine liquid individually compounded by a pharmacy. Both of these options present substantial barriers to people with SMI who often have difficulty ordering online. Furthermore, many medical practitioners are reluctant to prescribe an unapproved therapeutic product. The current laws which restrict access to much less harmful options such as nicotine-containing e-cigarettes, while the most harmful nicotine product (tobacco cigarettes) remains widely accessible, are unscientific and raise serious ethical concerns.

All smokers with SMI should be advised to stop smoking using approved medications first such as nicotine replacement therapy, varenicline or bupropion in combination with behavioural counselling and support. More intensive and longer courses of treatment are recommended in this population. However, patients who are not able or willing to quit smoking using conventional methods or who express interest in using e-cigarettes should be provided appropriate counselling and information about the risks and

benefits of switching to e-cigarettes, and supported in their efforts to do so.

New approaches are urgently needed to address the persistently high smoking rates in this priority population. Tobacco harm reduction by switching to e-cigarettes has the potential to substantially reduce the health, financial and social equity gap experienced by this disadvantaged group.

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References

- Cooper J, Mancuso SG, Borland R, et al (2012) Tobacco smoking among people living with a psychotic illness: The second Australian Survey of Psychosis. *Australian and New Zealand Journal of Psychiatry* 46: 851–863.
- Cummins SE, Zhu SH, Tedeschi GJ, et al. (2014) Use of e-cigarettes by individuals with mental health conditions. *Tobacco Control* 23(Suppl. 3): iii48–iii53.
- Glover M, Breier BH and Bauld L (2016) Could vaping be a new weapon in the battle of the bulge? *Nicotine & Tobacco Research*. Epub ahead of print 25 October. DOI: 10.1093/ntr/ntw278.
- Royal College of Physicians (RCP) (2016) *Nicotine without Smoke: Tobacco Harm Reduction*. London: RCP.
- Sharma R, Gartner CE and Hall WD (2016) The challenge of reducing smoking in people with serious mental illness. *The Lancet Respiratory Medicine* 4: 835–844.