COMMENTARY

Victimless vapour? Health care organizations should restrict the use of e-cigarettes

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ABSTRACT

Electronic cigarettes (e-cigarettes) are battery-powered devices that heat a liquid containing either vegetable glycerin or propylene glycol in combination with nicotine and/or flavours; an aerosol is produced that is inhaled by the user. Health Canada currently prohibits the importation, marketing or selling of e-cigarettes containing nicotine, although they can be easily purchased. Because of the availability of e-cigarettes, patients and visitors to health care organizations (HCOs) are inquiring about their use within and on the grounds of those facilities. We contend that in provinces or municipalities where e-cigarette use has not been restricted, HCOs should develop institutional policies to do so. We argue that the following reasons collectively justify measures to restrict the use of e-cigarettes within HCOs: unknown long-term safety, uncertain effectiveness in harm reduction, the conflict with the mission of HCOs to promote health, the potential negative health impacts on vulnerable patients with a compromised health status, and the risk of re-normalization of smoking. However, because of the rapidly developing evidence base in this area, HCOs should remain responsive to emerging evidence regarding the status of e-cigarettes as an effective harm reduction tool.

KEY WORDS: Public health; electronic cigarettes; health policy; bioethics; nicotine

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Can J Public Health 2015;106(8):e467–e469
doi: 10.17269/CJPH.106.5083

Electronic cigarettes (e-cigarettes), sometimes referred to as electronic nicotine delivery systems, are battery-powered devices that heat a liquid solution typically containing vegetable glycerin or propylene glycol in combination with nicotine and/or flavours; this produces an aerosol that is inhaled by the user.[1–3] Health Canada currently prohibits the importation, marketing or selling of e-cigarettes that contain nicotine or make a health claim, although they can be easily purchased in Canada in stores and online.[1,2,4] Illustrating the extent of their accessibility, a 2012 online survey suggested that 16.1% of Canadians aged 16–30 had tried e-cigarettes, an act referred to as "vaping".[5] Many provincial and municipal jurisdictions have therefore sought to implement use restrictions by treating e-cigarettes like a tobacco product.[6] For example, Ontario recently passed legislation that prohibits e-cigarettes in "enclosed workplaces, enclosed public places and certain other places".[7–9]

Treating e-cigarettes as a tobacco product is one approach to regulating e-cigarettes; another is handling e-cigarettes as a new drug or medical device.[10] If they are treated as the former, the approach is to implement use restrictions regarding who can purchase the product and where it can be used, whereas for the latter it is of paramount importance to demonstrate safety and effectiveness.[10] For jurisdictions lacking legislation, given the availability of e-cigarettes, patients and visitors to health care organizations (HCOs) are inquiring about the use of e-cigarettes within and on HCO property. Until there is applicable legislation at the federal, provincial or municipal levels, HCOs must therefore develop their own policies if they wish to promote consistent decision-making.[2] While the most appropriate regulatory approach for e-cigarettes remains contested,[11] we argue that the following reasons collectively justify measures to restrict the use of e-cigarettes within HCOs: unknown long-term safety, uncertain effectiveness in harm reduction, the conflict with the mission of HCOs to promote health, the potential negative health impacts on vulnerable patients with a compromised health status, and the risk of re-normalization of smoking.

Three concerns

There are three central concerns pertaining to the regulation of e-cigarettes within HCOs: 1) safety, 2) effectiveness as a smoking cessation tool and 3) risk of re-normalization of smoking.[2] These concerns are largely contingent on the emerging evidence base surrounding e-cigarettes. As such, the concerns raised here should be considered defeasible in light of rapidly developing evidence in this area.

Safety

The liquid nicotine used in e-cigarettes is a strong neurotoxin: even a small amount spilled or ingested on the skin can cause vomiting, seizures and, potentially, death.[2,12]In 2013, there were 1,351 reported

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Conflict of Interest: None to declare.

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liquid nicotine poisoning cases in the US, a 300% increase from the previous year.[2,12] Comparable data for Canada could not be identified. However, these concerns may be attributed to manufacturing flaws, such as improper child-resistant packaging, and could be remedied by strengthening manufacturing standards.[10] In addition, scientists have identified a pattern of gene expression in cells exposed to e-cigarette vapour that was similar to that in cells exposed to tobacco smoke.[13]

Smoking Cessation

Data are limited regarding the effectiveness of e-cigarettes as a smoking cessation tool. A Cochrane intervention review published in 2014, which included 13 studies (2 randomized controlled trials, 11 cohort) with a combined sample size of 662 participants, found that participants using e-cigarettes were more likely to have abstained from smoking for at least 6 months than were those using a placebo.[14] However, this evidence was assessed as low grade, which means that further research is likely to affect the confidence of the estimate of impact.[14] Two of the trials demonstrated that e-cigarettes helped smokers to stop smoking for the long term compared with placebo e-cigarettes, but this again was supported by low-grade evidence.[14]

Re-normalization

Some e-cigarette models resemble tobacco cigarettes and are often touted as being less harmful. Their use may therefore undermine prior successes in tobacco control, particularly among youth, by re-normalizing smoking.[15] A 2012–13 Canadian Cancer Society survey in Quebec found that a third of secondary school students had already used e-cigarettes.[7] The risk of re-normalization is of particular concern if e-cigarettes become a stepping stone to tobacco smoking among youth, if smokers who would otherwise have quit smoking switch to e-cigarettes or if former smokers begin using e-cigarettes rather than abstaining.[2,16]

Public health ethics considerations

In the absence of persuasive evidence to provide a clear direction for HCO policy, we can look to relevant public health ethics considerations and principles raised by current e-cigarette use to inform decision-making; namely, the harm principle, the precautionary principle and harm reduction.

Most public health anti-smoking interventions could reasonably be considered to be based on the harm principle, commonly attributed to philosopher John Stuart Mill: "… the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will is to prevent harm to others."[17] In the public smoking context, this means that the demonstrated negative effects of second-hand smoke could be used to justify restricting smoking in public.[18] However, given the limited, equivocal evidence of the harms of e-cigarettes to others, the harm principle may provide weaker justification for restricting e-cigarettes. This does not automatically mean that restricting e-cigarettes on HCO property is ethically unjustified, but rather that support for such a justification will likely need to be found in other principles.

The precautionary principle has been called a "clarifying amendment"[19] to Mill's harm principle, which aims to address decision-making in the context of uncertainty. One frequently cited interpretation of the principle states that, "When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, bears the burden of proof."[20] In the context of our discussion, this translates into shifting the burden of proof from the public (e.g., governments and public institutions), who would otherwise be tasked with establishing the risks of e-cigarettes in order to justify the implementation of precautionary measures, to e-cigarette manufacturers, who would be required to establish an acceptable degree of safety for e-cigarettes before the latter are permitted. This reasoning appears to be reflected in Health Canada's prohibition of e-cigarettes and their requirement that manufacturers seek market authorization by demonstrating the product's safety.

However, if e-cigarettes are in fact a less harmful alternative to tobacco cigarettes and perhaps even act as a smoking cessation tool, taking overly restrictive precautionary measures may be contrary to health care and the public health mission. Instead, e-cigarettes could be embraced as a tool for harm reduction, which entails implementing a measure, action or policy that has less harmful consequences than a more harmful behaviour, e.g., methadone vs. heroin.[18] To date, there is not enough research to demonstrate whether e-cigarettes are a plausible harm reduction tool. In the absence of persuasive evidence, precautionary measures to restrict their use may arguably be more justifiable given their potential for generating harm to users and others.

Institutional policy approaches

In terms of addressing the use of e-cigarettes in HCOs, there are three broad policy options: 1) treat e-cigarettes as if they were tobacco products and restrict their use broadly or only within designated areas, 2) prohibit use indoors only, or 3) permit use anywhere on the HCO's grounds.[2] Given the unknown safety of e-cigarettes both to the user and to those proximal to the user, option 3 would be problematic, and flavoured liquid nicotine could contravene many "scent-free policies", since it typically produces a scent.[2] Option 2, permitting use outdoors, is also troublesome in light of drifting vapour, which may pose harm to sick patients and also promotes visible vaping, possibly contributing to re-normalization.[2] Option 1, complete prohibition, would be the most pragmatic choice to implement, since it would entail applying the existing standard to include e-cigarettes.[2] Option 1 also facilitates protective measures for potentially vulnerable patients, who may be more susceptible to any negative consequences of exposure to second-hand vapour.

CONCLUSION

While a more fulsome exploration of the associated legal, ethical and policy issues related to e-cigarettes is beyond the scope of this commentary, this brief contribution has attempted to highlight the importance of ethical considerations in this context where no evidence exists regarding the long-term effects of e-cigarettes on users or those exposed to second-hand vapour,

and where there is limited evidence of their effectiveness as a smoking cessation method.

Because the mission of HCOs is to promote general health and well-being, and HCOs arguably have a duty to promote the recovery of patients in a compromised state of health, HCOs should restrict the use of e-cigarettes, as they do for tobacco products. Similar to smokers, e-cigarette users who are inpatients in an HCO should be given options for nicotine replacement therapy. Due to the emerging evidence base[21] and shifting regulatory environment, HCOs' e-cigarette policies should remain responsive to future research, particularly regarding the potential of e-cigarettes as a harm reduction tool.

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Received: March 31, 2015
Accepted: July 19, 2015

RÉSUMÉ

Les cigarettes électroniques sont des dispositifs à piles qui réchauffent un liquide contenant soit de la glycérine végétale, soit du propylèneglycol combinés avec de la nicotine et/ou des arômes; le dispositif produit un aérosol qui est inhalé par l'utilisateur. Santé Canada interdit encore l'importation, la commercialisation et la vente des cigarettes électroniques contenant de la nicotine, mais celles-ci s'achètent quand même facilement. En raison de la disponibilité des cigarettes électroniques, les patients et visiteurs des organismes de soins de santé (OSS) s'interrogent sur leur usage à l'intérieur et sur le terrain de ces établissements. Nous soutenons que dans les provinces ou les municipalités où l'usage de la cigarette électronique n'est pas contrôlé, les OSS devraient élaborer des politiques internes pour ce faire. Selon nous, les raisons suivantes justifient collectivement que l'on prenne des mesures pour contrôler l'usage des cigarettes électroniques dans les OSS : leur innocuité inconnue à long terme; leur efficacité incertaine en matière de réduction des méfaits; la contradiction avec la mission des OSS, qui est de promouvoir la santé; les effets sanitaires négatifs possibles sur les patients vulnérables à la santé fragile; et le risque de renormalisation du tabagisme. Cependant, vu l'évolution rapide des fondements scientifiques dans ce domaine, les OSS devraient rester ouverts aux nouvelles données probantes sur le statut de la cigarette électronique comme outil efficace de réduction des méfaits.

MOTS CLÉS : santé publique; cigarettes électroniques; politique sanitaire; bioéthique; nicotine