

Electronic cigarettes: time for an accurate and evidence-based debate

There is ongoing debate within the nicotine and tobacco research community concerning whether electronic cigarettes will offer a way out of the smoking epidemic or a way of perpetuating it. Robustly designed, implemented and accurately reported scientific evidence will be the best tool we have to help us predict and shape which of these realities transpires.

Evidence is urgently needed to inform the debate regarding the impact of electronic cigarettes on public health as national and international legislation moves forward. Current research and commentaries on electronic cigarettes/electronic nicotine delivery devices (referred to here as e-cigarettes) vary widely in quality, accuracy and objectivity. While these issues are not limited to the research community, we believe that researchers need to demonstrate better scholarship in this area. We illustrate our concerns with three examples below.

E-CIGARETTES DO NOT CONTAIN TOBACCO

Many publications and statements by researchers, non-governmental and governmental agencies and the wider mass media mistakenly refer to e-cigarettes as tobacco products. For example, e-cigarettes were referred to as tobacco products in approximately one in four abstracts about e-cigarettes at the 2014 Annual Meeting of the Society for Research on Nicotine and Tobacco in Seattle [1]. The same error can also be found in the peer-reviewed literature and in writing by influential agencies. For example, the US Center for Disease Control and Prevention website states that 'emerging tobacco products such as e-cigarettes and hookahs are quickly gaining popularity' [2].

While it is true that the vast majority of e-cigarettes use a nicotine containing solution that is extracted from the tobacco plant, this is similar to nicotine replacement therapies (NRT) and, unlike ordinary tobacco cigarettes, the current e-cigarettes on the market operate with 'no tobacco, smoke, or combustion' [3]. Furthermore, although traces of tobacco-specific nitrosamines (TSNAs) have been found in some e-cigarettes, similar traces of TSNAs are present in licensed NRTs [4–7]. This mislabeling is exacerbated by national and international regulations including e-cigarettes in their tobacco regulations or proposing to do so. For example, e-cigarettes are regulated under proposed revisions to the European Union's Tobacco Products Directive [8].

We do not believe that NRT products are referred to as tobacco products, so why are researchers inaccurately classifying e-cigarettes in this way? Whether this is due to lack of knowledge, carelessness or attempts to associate e-cigarettes with the immense harm caused by tobacco, classifying e-cigarettes as tobacco is inaccurate and unacceptable.

E-CIGARETTES ARE A HETEROGENEOUS CATEGORY

Much of the research to date has treated e-cigarettes as if they were a single product. However, an enormous range of products is covered by the term 'e-cigarettes'. E-cigarettes vary vastly in their function, content and appearance. For example, while the appearance of some e-cigarettes closely mimics that of tobacco cigarettes, others have no obvious similarity. Different types of e-cigarettes also vary in how much, if any, nicotine they deliver, and nicotine exposure may depend on the user [3,9–11]. Also, different marketing and sales strategies are evolving. For example, in the United Kingdom, while many products are sold online, some products are only available in pharmacies, while others are being sold alongside tobacco in shops. Furthermore, there are now a variety of players in the e-cigarette market, including the tobacco industry. Some have questioned the motives of tobacco industry involvement in the e-cigarette market [12], and it is necessary to be cognisant of their involvement.

To move research and debate forward, it will be important to acknowledge the differences between e-cigarettes, the variability in how individuals use them, what limitations this poses on current research and any implications for regulations. Additionally, it will be important to pay attention to how nicotine delivery/exposure, marketing, the activity of industry stakeholders and regulation affect people's use of different types of e-cigarettes and other nicotine products. E-cigarettes are not a homogeneous group of products and it is crucial to state clearly which product/s have been studied and avoid overgeneralizations from specific products onto the plethora of options available.

ARE E-CIGARETTES A GATEWAY TO SMOKING ORDINARY CIGARETTES?

One of the main concerns about e-cigarettes is that they or the marketing concerning them could be attractive to

children who will try e-cigarettes and then move from them to become dependent upon ordinary tobacco cigarettes (the 'gateway' hypothesis). This was also a concern about low nitrosamine smokeless tobacco products, but the evidence was highly contestable then [13] and is similarly contestable for e-cigarettes [14]. We think a useful research exercise would be to explore the 'gateway' hypothesis in more detail—what evidence would be needed before the 'gateway' hypothesis could be demonstrated to be accurate? Can we set a standard to which all academics would agree?

WHAT NEEDS TO HAPPEN?

We believe that statements from the research community need to be evidence-based. While lively debates help to advance science and policy, adherence to good scientific practice is paramount. We need more rigour and oversight to ensure that interpretation of evidence is guided by data, not emotions, and that strong statements based on weak evidence are avoided. We need those reviewing grants and research papers, and also those publishing such papers, to be accountable. E-cigarettes may offer a way out of the smoking epidemic or a way of perpetuating it; robustly designed, implemented and accurately reported scientific evidence will be the best tool we have to help us predict and shape which of these realities transpires.

Declaration of interests

None.

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