

E-cigarettes: time to realign our approach?

A multistate, US outbreak of lung injury associated with e-cigarette use has affected at least 1080 people and caused 18 deaths as of Oct 1, according to the US Centers for Disease Control and Prevention (CDC). This number looks set to grow as more cases are discovered and reported. 80% of the patients affected are younger than 35 years, and all report using e-cigarettes, many with tetrahydrocannabinol. The specific exposure is unknown, with no single product or substance associated with the outbreak. Many US e-cigarettes have an uncertain provenance, containing a mix of ingredients, which might be illicit or altered, meaning the cause of the outbreak is difficult to trace. As new data emerge, national bodies must re-analyse the evidence on e-cigarettes and ask: how different are e-cigarettes from combustible cigarettes?

The pathology of vaping-associated lung injury is still uncertain, but a case definition developed by the CDC includes a history of e-cigarette use, pulmonary infiltrates on imaging, absence of a pulmonary infection, and no other plausible alternative diagnosis. Recent correspondence to the *New England Journal of Medicine* described lung biopsy samples from 17 patients, which showed patterns of acute lung injury. The histological findings, the authors suggest, were not consistent with exogenous lipid pneumonia, possibly discounting one of the prevalent theories that attributes causation to vitamin E acetate in e-cigarette liquid. Instead, the features were more consistent with airway-centred chemical pneumonitis from inhaled toxic substances.

Manufacturers of e-cigarettes, and some public health advocates, have supported their use as a smoking cessation tool and a safer alternative to cigarettes. However, the evidence for both of these claims is weak. No e-cigarettes have been tested or launched as smoking cessation products; all are sold directly to the consumer as tobacco, not medicinal, products. Three randomised trials of third-generation products show low rates of abstinence at 6 months. Data also suggest that smokers switch to e-cigarettes, then remain dependent long term. The very high nicotine levels delivered by some e-cigarettes could make them more difficult to quit than cigarettes. Very few data on long-term health effects are available to support the safety claims. The positioning of e-cigarettes as a viable cessation aid is vastly overstated, especially since the current first line treatment (nicotine replacement

therapy under medical supervision) has a strong evidence base demonstrating safety and efficacy.

Claims that e-cigarettes are useful harm-reduction tools are further undermined by their high uptake among young people. Cigarette smoking among US adolescents had declined substantially in the past 20 years, but there has been a huge rise in adolescents using e-cigarettes, with rates of use at around 25% among 18-year-olds and 20% among 16-year-olds. The availability of flavoured e-liquids is cited by nearly a third of users as a major reason to start vaping, especially among younger adults. Concerns have been raised around the marketing of e-cigarettes to young adults and new users. Advertising featuring young, attractive models, sponsorship of sports events and parties, product placement, and direct payments to social media influencers are strikingly similar techniques to those used previously by the cigarette industry. In many cases, e-cigarette marketers have commandeered the public health message around smoking to promote a healthy and glamorous alternative. In response, the US Food and Drug Administration wrote to Juul Labs, criticising illegal marketing that claimed that their e-cigarettes were less harmful than cigarettes.

As concerns mount about the safety of e-cigarettes, several countries and national bodies have tightened regulations. India plans to ban e-cigarettes. Several US states have moved to ban flavoured e-cigarettes. The European Respiratory Society has aligned its recommendations on e-cigarettes with those on cigarettes, both encapsulated in one word: don't. They also announced that the same membership restrictions will apply for those with conflicts of interest related to e-cigarettes as for cigarettes. Public Health England, however, continues to endorse e-cigarettes as safer than cigarettes.

No solid evidence base underpins the marketing claims that e-cigarettes are healthier than cigarettes or that they can support quitting, but lax regulation has allowed e-cigarette manufacturers to pervert the success of antismoking public health messages and position e-cigarettes as healthy. The renormalisation of smoking in the form of e-cigarettes, not only among smokers, but also among young people and never smokers, risks population-wide nicotine use and dependence on a massive scale. Surely it is time to align the public health approach to e-cigarettes with that of cigarettes. ■ *The Lancet*



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For the *NEJM* letter on pathology of vaping-associated lung injury see *NEJM* 2019; published online Oct 2. <https://www.nejm.org/doi/full/10.1056/NEJMc1913069>

For trends in adolescent vaping see *NEJM* 2019; published online Sept 18. <https://www.nejm.org/doi/full/10.1056/NEJMc1910739>

For an editorial on vaping-related lung illnesses in *The Lancet Oncology* see Editorial *Lancet Oncol* 2019; 20: 1327

For more on Public Health England's stance on e-cigarettes see Editorial *Lancet* 2018; 392: 614