




Cochrane review update leaves big questions unanswered regarding vaping: implications for medical practitioners

To the Editor:

We read with great interest the recent correspondence by PISINGER and VESTBO [1], published in the *European Respiratory Journal*, which summarises the findings of a Cochrane review on electronic cigarettes for smoking cessation [2]. We strongly agree with PISINGER and VESTBO [1] that the authors have not presented a balanced scientific view and have overlooked the dangers of early, such as e-cigarette or vaping associated lung injury (EVALI), and long-term electronic cigarette use. This is an important public health issue, and we would like to further enhance this discussion.

This latest Cochrane review [2], with some authors having expressed past pro-vaping views, is an update to a review completed in 2014 [3], which we believe should be viewed with caution. The most notable aspect they overlook is that electronic cigarette studies do not provide acceptable figures for successful smoking cessation. One randomised controlled trial featured shows poor cessation rates and an alarming 80% of users trialling electronic cigarettes that continued vaping following the trial [4]. The other major result ignored was that 96.3% of subjects remained dependent on nicotine following the trial of electronic cigarettes [4]. The Cochrane update in 2020 continues to recommend electronic cigarettes as both a stand-alone and adjunctive cessation tool, whilst failing to acknowledge emerging studies which detail toxicity and pathology linked to electronic cigarette use.

In Australia, the Therapeutic Goods Administration (TGA) decided that as of 1 October, 2021, the importing of nicotine by consumers will require a prescription from a medical practitioner. In Australia, the TGA is tasked with the role of testing and approving new medications. It is therefore of interest that no liquid nicotine products are TGA approved, although it is the TGA that has confirmed that nicotine-containing electronic cigarettes can from October 2021 only be accessed by doctor's prescription. It is with great astonishment that products linked to the tobacco industry with undetermined chemical content and safety, can then be legally obtained through general medical practitioners, known as GPs in Australia. Worldwide, no vaping product has been put forward as a "medicine" and their efficacy and safety as cessation tool has yet to be properly assessed. Many Australian GPs are of course wary and concerned about prescribing electronic cigarettes as a smoking cessation aid, according to the public statements made by Australian Medical Association. However, GPs can refuse to prescribe electronic cigarettes whilst still providing other cessation tools and advice. We strongly believe that hesitance is warranted in relation to these new rules and that GPs should continue to offer alternative and safer cessation advice. In conjunction with this decision, the Australian government is providing AUD 1 million in funding towards a smoking cessation education campaign. Between now and 1 October we anticipate a slew of ripostes from pro-vaping groups and big tobacco in rebuttal to the decision. The updated Cochrane review from HARTMANN-BOYCE *et al.* [2] appears to maintain emphasis in the opposite direction, in relation to education surrounding the danger of electronic cigarette devices. TGA delegates note in their decisions that current available evidence does not support that electronic cigarettes are a safer alternative to smoking cessation aids currently available. They are also in agreement that there is currently insufficient evidence to conclude whether electronic cigarettes can benefit smokers in quitting. The largest and most dangerous unknown with electronic cigarettes is the potential early and long-term harmful effects. Long-term effects could include damaging effects on cellular metabolism and DNA damage [5].

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Emerging scientific evidence for vaping-induced lung disease is stronger than short-term behavioural whims. Cease smoking, cease vaping for true nicotine cessation and for healthier lungs. <https://bit.ly/3cUfhOv>

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resulting in adverse health outcomes. It is suggested that many people who use electronic cigarettes are not trying to quit; they simply want to vape and/or smoke. Electronic cigarettes are nothing more than an addictive recreational drug and can be overlooked as a magic remedy for nicotine addiction.

We have shown high concentrations of nicotine to be cytotoxic and therefore the blending of nicotine into e-liquids for the consumer is hazardous [5, 6]. We have also maintained our opinion that vaping with nicotine is an avoidable risk factor in the coronavirus disease 2019 (COVID-19) pandemic [7]. In a recently published study, we confirmed that electronic cigarette condensates increases the expression of SARS-CoV-2 (COVID-19) receptor angiotensin-converting enzyme-2 (ACE2) in primary human small airway epithelial cells and bronchial epithelial BEAS-2B cells [8]. Concentrations of nicotine and the production of other volatiles in electronic cigarette aerosols could lead to an epidemic similar to the EVALI outbreak in the USA [9]. Counterfeit electronic cigarette cartridges (containing THC and vitamin E acetate), particularly localised to, but not limited to, the USA, were deemed to be the source of EVALI admissions. Further electronic cigarette vapour constituents and their pathological implications in the lung are shown in figure 1. Of utmost importance, we amongst an array of other scientists have repeatedly shown electronic nicotine delivery devices to be toxic and in no regard a “safer” option to smoking tobacco [6]. We believe, however, that the remarkable modifiable nature of electronic cigarettes should be of the greatest concern in their apparent promotion by psychologists, parliamentarians and pro-vapers. Any combination of fluid can be placed into these devices which in themselves can be modified to aerosolise the liquid at various high wattages. Just as there is no regulation of the content and engineering of cigarettes in Australia, which have evaded any scrutiny for over a hundred years, nor is it apparent that there is any likelihood on the horizon of regulation of electronic cigarette content or engineering, due to the avoidance of scrutiny by manufacturers and their powerful lobbying endeavours. Tobacco manufacturers can lawfully insert anything they choose, however toxic, in their products and the same applies to electronic cigarette manufacturers. It was reported in the recent Australian Financial Review (20–21 February, 2021) that the tobacco industry contract-funded peak retailer organisations to promote electronic cigarettes, and successfully lobbied for a Senate enquiry. TGA director Prof. John Skerrit told the enquiry “I believe that smoking is more harmful than vaping but that does not make vaping harmless – in the same way that being hit by a car on the freeway is less harmful than being hit by a truck but it is not desirable.”

With the responsibility of prescribing electronic cigarettes with nicotine to new and old vapers in Australia, GPs are also given the task of deeming (in practice, guessing) what concentration is “safe”. Nicotine concentration has been shown to vary significantly in previously available e-liquids, and high nicotine concentrations have been shown to be cytotoxic [10]. Liquid nicotine can be lethal if swallowed by children, and one Australian coroner has reported this fact. Will Australian GPs be thoroughly educated in what could be a “safe” mixture for electronic cigarette consumers? Great responsibility will now lie with GPs and their professional associations.

We strongly believe that both tobacco smoke and electronic cigarette condensates in the lungs are neither healthy, nor safe. Coupled with the probability of long-term adverse health effects, this should be sufficient to convert the opinion of fence-sitters, parliamentarian, and pro-vapers with a conscience. Great caution should also be taken by policymakers when promoting such products. We do not believe that substantial evidence exists for electronic cigarettes to be used as a tool for smoking cessation. In our opinion, the risks of electronic cigarettes are far too great for them to be deemed safe to be prescribed by medical professionals.

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