E-cigarettes may help smokers stop or reduce smoking

Leonie S Brose
Addictions Department, Institute of Psychiatry, Psychology & Neuroscience (IoPPN), King’s College London & UK Centre for Tobacco and Alcohol Studies (UKCTAS), London, UK

Correspondence to: Dr Leonie S Brose, Addictions Department, Institute of Psychiatry, Psychology & Neuroscience (IoPPN), King’s College London 4 Windsor Walk, London, SE5 8BB, UK; Leonie.brose@kcl.ac.uk


Context
Tobacco smoking kills at least half of all continuing smokers. The nicotine in tobacco smoke is the main cause of addiction but causes almost none of the harm to health.1 Most smokers want to stop and many attempt to, but few succeed long term. Provision of nicotine replacement therapy (NRT) is a widely used and effective way of helping smokers to stop2 and is supported as harm reduction strategy.3

Electronic cigarettes (e-cigarettes), which are not licensed as NRT, produce an aerosol by heating a liquid that usually contains propylene glycol or glycerine, with a wide choice of flavours and different concentrations of nicotine (including none) available. E-cigarettes contain no tobacco and do not expose users or bystanders to smoke. In the UK, e-cigarettes are used by over 2.5 million individuals, almost exclusively smokers and ex-smokers. The main reasons for use are to stop smoking and reduce harm.4

Methods
The primary objective of this Cochrane review was to assess the efficacy of e-cigarettes for helping smokers to achieve abstinence from smoking. Secondary objectives were to assess their efficacy for helping smokers to reduce cigarette consumption by at least 50% and to assess adverse events. Outcomes of abstinence and reduction were measured at the longest follow-up point, at least 6 months after baseline. Participants lost to follow-up were treated as still smoking at baseline levels and abstinence was biochemically verified.

Findings
The review identified two randomised controlled trials (RCTs), six cohort studies to supplement the RCT findings on smoking behaviour change and five cohort studies only included in the assessment of adverse events. Nine further trials were ongoing at the time. The pooled results showed that smokers using a nicotine-containing e-cigarette were more likely to stop smoking than those using placebo e-cigarettes. The trial comparing an e-cigarette with a form of NRT (nicotine patch) found similar efficacy of the two. Nicotine-containing e-cigarettes were associated with higher chances of reducing consumption than placebo e-cigarettes and nicotine patch. The RCT findings were supported by those of the cohort studies and there was no evidence that using an e-cigarette while smoking made smokers less likely to stop. Adverse events did not differ between intervention and control groups in the RCTs, and none of the included studies reported any serious adverse events related to e-cigarette use. Mouth and throat irritation were the most frequently reported adverse events.

Commentary
The RCTs had a low risk of bias, the risk is higher in cohort studies. Outcome measurement adhered to strict standards although reduction findings were limited by a lack of biochemical verification. The review excluded studies with designs that cannot address the efficacy of an intervention such as the plethora of cross-sectional studies and studies that followed up only ‘treatment failures’, that is those seeking further help, thereby excluding anyone who had stopped successfully. The confidence in the review conclusions was low due to the small number of trials with relatively low power. This means that further research is very likely to have an impact on estimates of effects. A wide range of brands and models of e-cigarettes with an even wider range of liquids is available, which makes generalisation of statements about efficacy difficult; importantly, those used in the trials delivered low levels of nicotine. Newer products with better nicotine delivery are expected to be more helpful.

Implications for practice
Use of e-cigarettes by smokers appears to help smokers to stop or reduce their smoking. Their popularity provides an opportunity to attract smokers to attempt stopping and harm reduction. As the health benefits of reduction are far less than those of complete smoking abstinence, smokers using e-cigarettes should be supported with an aim to stop smoking tobacco cigarettes completely, for example by services that provide behavioural support and medication, the most effective intervention.5

E-cigarettes and their potential harms and benefits are a passionately debated topic. This systematic review which followed the stringent Cochrane procedures provides the most reliable evidence on their efficacy for stopping and reducing smoking to date. In this very quickly moving field, updates will hopefully be frequent to include the latest evidence and increase confidence in the conclusions.

Competing interests None declared.

Provenance and peer review Commissioned; internally peer reviewed.

References