E-cigarette awareness and use to quit smoking

A survey suggests that awareness and use of e-cigarettes has increased over the past few years, but a randomised controlled trial indicates that the products are only modestly effective at helping people to quit smoking.

Overview: In England, around 1 in 5 adults aged 16 and over smoke cigarettes (Health and Social Care Information Centre 2013). Smoking can cause premature death from cancer (especially lung cancer), chronic obstructive pulmonary disease and ischaemic heart disease. In 2011, an estimated 1 in 5 deaths of people over 35 years of age in England was caused by smoking. Smoking is also associated with health problems, such as angina, and harmful effects on other people exposed to cigarette smoke. Illness and disease related to smoking cost the NHS in the UK an estimated £5.2 billion in 2005–06, approximately 5.5% of total healthcare costs (Allender et al. 2009).

E-cigarettes, introduced in 2004, are a means of ingesting nicotine through vapour rather than smoked tobacco. An estimated 27% of smokers in England have recently used e-cigarettes to help them quit (Smoking in England 2014). In June 2013, the Medicines and Healthcare Products Regulatory Agency announced that e-cigarettes would be regulated as medicines, to ensure that high-quality products can be made available to help smokers cut down their smoking and to quit (MHRA 2013). E-cigarettes are currently unlicensed in the UK, but will need a medicines licence once the European Commission’s revised Tobacco Products Directive comes into effect (expected in 2016). However, the efficacy and safety of e-cigarettes to help people quit smoking, or for people who want to cut down on tobacco, is unclear.

Current advice: NICE public health guidance on smoking (PH1 [currently being updated], PH10 and PH48) recommends that healthcare professionals should advise everyone who smokes to quit, unless there are exceptional circumstances. People who want to stop should be offered a referral to an intensive support service (for example, NHS Stop Smoking Services) or pharmacotherapy, such as nicotine replacement therapy, varenicline or bupropion.

NICE guidance on harm-reduction approaches to smoking (PH45) also recommends licensed nicotine replacement products for people who may not be able (or do not want) to stop smoking in one step, may want to stop smoking without necessarily giving up nicotine, or may not be ready to stop smoking but want to reduce the amount they smoke.

Nicotine-containing products that have ‘marketing authorisation’ for use as a smoking cessation aid and for tobacco harm reduction include transdermal patches, gum, inhalation cartridges, sublingual tablets and a mouth and nasal spray, but not e-cigarettes. NICE advises that little direct evidence is available on the effectiveness, quality and safety of nicotine-containing products that are not regulated by the MHRA, but they are expected to be less harmful than tobacco.
The NICE Pathways on smoking prevention and cessation, smoking cessation in secondary care and tobacco harm-reduction approaches bring together all related NICE guidance and associated products on smoking in interactive topic-based diagrams.

**New evidence:** Dockrell et al. (2013) surveyed awareness and use of e-cigarettes among adults in Great Britain in 2010 and 2012. The sample was taken from a panel of more than 185,000 adults in Britain developed by the polling company YouGov. In surveys of this population (12,597 adults [2297 smokers] in 2010 and 12,432 adults [2093 smokers] in 2012), awareness of e-cigarettes among smokers increased considerably over 2 years, with the proportion of smokers who had not heard of e-cigarettes falling from 38.2% in 2010 to 21.1% in 2012 (p<0.001). In 2012, more than half (58.9%) of never smokers and just under half (49.7%) of ex-smokers had not heard of e-cigarettes.

In the 2012 survey, almost a quarter (23.1%) of daily smokers reported having tried e-cigarettes, compared with 17.0% of occasional smokers, 3.8% of ex-smokers and 0.5% of never smokers. The proportion of smokers who reported current e-cigarette use and the proportion of smokers who reported having tried e-cigarettes but who no longer used them more than doubled between 2010 and 2012 (p<0.001 for both). Using official data on the adult population of Great Britain, the authors estimated that around 800,000 people were current users of e-cigarettes in 2012, 600,000 of whom were current smokers and 170,000 were ex-smokers.

Bullen et al. (2013) did a randomised controlled trial of e-cigarettes versus nicotine patches to help people stop smoking. Adult smokers in New Zealand who wanted to quit were randomly assigned to nicotine e-cigarettes (n=289), nicotine patches (n=295) or placebo e-cigarettes with no nicotine (n=73). Participants used the intervention for 1 week before quitting and 12 weeks after. Abstinence was verified biochemically at 6 months and by self-report at 1 month and 3 months.

At 6 months, the proportion of people not smoking was higher in the nicotine e-cigarettes group (7.3%) than in the nicotine patches group (5.8%; risk difference=1.51, 95% confidence interval [CI] -2.49 to 5.51) and the placebo e-cigarettes group (4.1%, risk difference=3.16, 95% CI -2.29 to 8.61). Abstinence was substantially lower than expected, so the study did not have sufficient power to test the superiority of nicotine e-cigarettes to patches or to placebo e-cigarettes. In post-hoc analyses using a 5% non-inferiority limit, nicotine e-cigarettes were at least as effective as patches (absolute risk difference for abstinence at 6 months=1.51, 95% CI -2.49 to 5.51). No significant differences in adverse events were identified between the groups.

**Commentary:** “The use of e-cigarettes presents a challenge to the public health community. Their rise in popularity, coupled with questions over safety, effectiveness and risks of re-normalising smoking (O'Connor, 2012), mean that research that contributes to the evidence base is very welcome.

“The survey findings from Dockrell et al. (2013) indicate that current smokers are the group most likely to use e-cigarettes, which is in line with other evidence to date. However, the research indicates that the proportion of smokers who no longer use e-cigarettes has increased significantly (more than doubled), and a large number of smokers are now using them in addition to smoking tobacco. Continuing to monitor these trends will be important in building our understanding of how, and by whom, e-cigarettes are being used.

“The research from Bullen et al. (2013) suggests that e-cigarettes may prove useful as a quitting device for some tobacco users. They showed that e-cigarettes had a similar effect on the likelihood of quitting as patches. The effect size was modest and not statistically significant. Communicating these research findings with smoking cessation services and with the public may help people to understand the uncertainty around using these products as a quit device.

“The findings from these studies indicate that e-cigarettes are being used by small numbers of people to quit smoking. However, we don’t know what effect the presence and promotion of these products will be having on the tobacco smoking habits of our population long term.” – Jennifer Connolly, Specialty Registrar in Public Health, Stockport Council and Stockport Clinical Commissioning
Group and Dr Vicci Owen-Smith, Clinical Director (Public Health), Stockport Clinical Commissioning Group and Deputy Director of Public Health, Stockport Council

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