Written evidence submitted by University College London, Tobacco and Alcohol Research Group (UTARG) (ECG0047)

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Aims

This submission aims to assist the Commons Select Committee in answering the following questions:

1. How safe or harmful are e-cigarettes relative to conventional cigarette smoking?
2. How effective, or counterproductive, are e-cigarettes when used as an aid to smoking cessation?
3. Has growth in the use of e-cigarettes by adolescents increased or reduced smoking uptake in this age group?

To do this, it provides a) a brief statement of what we think the current evidence implies, b) why we think the evidence supports that view, and c) the basis of differences between our views and those of some others in the field.

We have not attempted comprehensive systematic reviews in these areas because the Royal College of Physicians has provided a comprehensive review which covers the research up to 2016 (1). Our concise briefing is intended to update and complement that review and provide a perspective from an active research group in the area. We would be happy to elaborate, or answer questions on, this evidence either in writing or in oral testimony.

By way of context, we first describe trends in prevalence of e-cigarette use in England from our own research, the only country for which there are monthly data from national surveys.

Trends in prevalence of e-cigarette use in England

After an initial rapid growth in prevalence of e-cigarette use from 2011 to 2014, it has stabilised at 5.7% of the adult population representing approximately 2.6 million people aged 16+ years. E-cigarette use by people who have never smoked remains negligible at less than 1%. Growth in prevalence among current smokers has remained stable at approximately 20% since 2014. Growth in use as a quitting aid stabilised at approximately 35% in 2015. More details are available from http://www.smokinginengland.info/latest-statistics/.

1. How safe or harmful are e-cigarettes relative to conventional cigarette smoking?

   a) On current evidence, e-cigarette use is almost certainly much less harmful than smoking conventional cigarettes both to smokers and to bystanders, but probably carries some risk.

   b) While direct evidence of relative risk of serious health conditions arising from long-term use of e-cigarettes is absent, the concentrations of toxicants measured thus far in the vapour and body fluids under usual use conditions are mostly a small fraction of what is found with cigarettes (1, 2).

   c) Our estimate differs from those who propose that e-cigarette use may be similar to, or exceed, the harmfulness of conventional cigarettes because the studies that purport to have found concentrations of some toxicants in vapour high or higher than in cigarette smoke, or physiological reactions to vapour similar to or greater than smoking, have either failed to model natural exposure conditions or overstated the clinical significance of physiological changes. This continues to be a major source of confusion, with research reports and press releases overclaiming from findings that have little or no relevance to prediction of serious illnesses in e-cigarette users.
2. How effective, or counterproductive, are e-cigarettes when used as an aid to smoking cessation?

   a) E-cigarettes improve the success rates of smokers who use them in a quit attempt compared with those who use nothing. The degree to which they help appears to be broadly similar to optimal use of licensed stop-smoking medicines such as varenicline (Champix) or ‘dual form nicotine replacement therapy’ (nicotine transdermal patch plus a faster acting product such as lozenge). The effect may be greater in newer generation e-cigarette products but direct evidence on this is lacking.

   b) A Cochrane review of the two completed randomised controlled trials found that first generation e-cigarettes helped smokers in the studies to stop smoking in the long term compared with placebo devices at a rate broadly similar to nicotine replacement therapy (3). Population-level studies have shown that the rise in use of e-cigarettes in countries like the UK and US has been associated with increases in the quit success rate of the population (4, 5). A large study that compared quit success rates in smokers who used an e-cigarette in a quit attempt versus those who used other methods found an increased success rate compared with use of no aid (6). The effect size was similar to that found with prescription stop-smoking medications and the results of the randomised trials. One multinational study did not show higher quit rate in e-cigarette users overall, but did report higher quit rates associated with e-cigarette use in the US and UK (7).

   c) Our estimate differs from those who propose that use of e-cigarettes reduces smokers’ chances of quitting smoking (8). That claim is based on observational studies of associations between use of e-cigarettes and smoking status, which could not adequately control for important confounders, such as dependence, inadequately assessed reasons or motives for using e-cigarette, or used an unsuitable comparison group. That claim is also incompatible with the significant increases in population quitting rates in the UK and US that have accompanied the growth in prevalence of e-cigarette use (4, 5). In order for the view that e-cigarettes reduce chances of quitting to be tenable, one would have to believe that the increase in quitting rates would have been even higher in both the US and the UK as a result of some factor that has gone unrecognised.

3. Has growth in the use of e-cigarettes by adolescents increased or reduced smoking uptake in this age group?

   a) Growth in the prevalence of use of e-cigarettes by young people has not clearly changed the rate of decline in smoking uptake in the UK or US.

   b) While studies have found that adolescent e-cigarette users are more likely to smoke, the large majority of e-cigarette users had already started smoking (9). In the UK, the rate of decline in smoking uptake in adolescence and early adulthood has not shown signs of slowing or increasing with the increased prevalence of e-cigarette use in this age group (10). In the US, cigarette smoking among adolescents has actually declined somewhat faster since e-cigarettes became popular (11).

   c) Our view differs from those who propose that e-cigarettes are acting as a ‘gateway’ to smoking because, despite claims to the contrary, the studies being cited have not adequately accounted for the fact that young people who try e-cigarettes are the kind of young people who will also be likely to try conventional cigarettes. If there really were a gateway effect on a large scale we should be seeing a slow-down in the rate of decline in smoking uptake and we are not.
Statement of competing interest

UTARG receives funding from, and some members undertake consultancy and research for companies that develop and manufacture smoking cessation medicines (Pfizer, J&J and GSK). It does not have any financial links with tobacco companies or e-cigarette manufacturers or their representatives. Its research is funded primarily by Cancer Research UK.

About UTARG

UTARG is a research group within the Faculty of Population Health Sciences at UCL. In relation to tobacco, its primary purpose is to further our understanding of smoking and smoking cessation, and to help develop and implement interventions to reduce smoking prevalence. It hosts the Smoking Toolkit Study, a monthly series of national surveys in England aimed at tracking smoking and smoking cessation activities nationwide, and understanding what underlies changes at individual and population levels. Top line findings are reported monthly at www.smokinginengland.info.

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References