

Lynne Dawkins: E-cigarettes - an evidence update

[Dr Lynne Dawkins](#) of London South Bank University gives her terrific myth-busting lecture on e-cigarettes - see the YouTube video above. Here are the slides ([Slideshare](#)) and here below is Lynne's summary of the key points.

Summary of the lecture & key points

In 2013, I delivered a public lecture on e-cigarettes ([here](#)). At that time, not much was known about e-cigarettes, they were only just starting to gain popularity and very little research had been published on the topic.

Since then, the technology has moved on considerably, many more people are using them and there have been hundreds of research studies published on the topic. Nevertheless, public perceptions of e-cigarettes seem more distorted, confused and naïve than ever. I thought it was about time to present an update of what we know now based on the research that has been conducted since 2013.

The lecture is based around common myths, beliefs and perceptions held about e-cigarettes. The myths or beliefs presented are all things that myself or my colleagues have heard from people we've interacted with in the last few years. I present these below with a quick summary

1: "We don't know anything about them"; "There's been no research on them"

Myth: We know quite a lot about e-cigs now (see later points) given that there has been a dramatic year on year increase in the number of publications on the topic

(from around 50 in 2013 to over 500 in 2018 based on a pubmed search alone). Note of caution: not all research publications are methodologically sound, ecologically valid or translated accurately to a press release - this can cause further confusion around harms (see 7 below).

2. “They’re not regulated’

Myth: E-cigarette regulation might not be perfect but they ARE regulated. In the UK, there are two routes to market for e-cigarettes, a consumer route (under the EU Tobacco Products Directive) or the medical route (via the Medicine Healthcare Regulatory Agency). These include a notification process, reporting mechanism, standards for packaging and labelling and advertising restrictions.

3. “Young people are using them”; “Non-smokers are using them”; “Everyone’s using them!”

Partial myth and exaggeration: I return to the point about young people in 9 below. The charity, Action on Smoking & Health (ASH) estimate that 3.2 million adults in Great Britain currently use e-cigarettes (vape)¹ but this is only 6.2% of the population. And, if we look at who’s using them, use is concentrated mainly among current smokers (1.7 million) and ex-smokers (1.4 million). Use among never-smokers is very low - around 0.5% of the general population.

4. “They contain nicotine so it’s just swapping one addiction for another”

True to an extent - but this may be more of a moral issue (or an individual preference) rather than a public health problem. Nicotine, whilst addictive, is not responsible for most of the detrimental effects on health which are caused by the smoke from burning tobacco. Switching to a ‘cleaner’ form of nicotine administration such as vaping therefore substantially reduces risk of smoking-related illness although it may maintain nicotine addiction. The limited research available on the addictiveness of vaping compared with tobacco smoking suggest that vaping is less ‘addictive’ than smoking.

5. “My wife/boss/friend/agonist aunt/dog etc. uses it constantly. S/he must be getting more nicotine”.

Myth: This is a commonly expressed view that we hear from those whose partners/ friends/ family members have switched to vaping. Given that vaping results in less efficient nicotine delivery to the blood than tobacco smoking, those switching to e-cigarettes need to vape more than they used to smoke (vapers commonly refer to this as ‘grazing’). Concerns over ‘excessive vaping’ can be reduced by switching to a higher nicotine-containing e-liquid. Furthermore, any nicotine over-dosing by vaping in humans is quickly remedied through vomiting!

6. “They’re always exploding”; “They catch fire”

Not quite a myth as e-cigarettes do contain lithium-ion batteries which can over-heat and explode but cases of explosions and fires tend to be over-estimated and exaggerated. A number of case studies in the literature have reported burns associated with exploding e-cigarettes and call-outs for e-cigarette related fires have increased (although many are false alarms). Data reported by McNeil et al. (2018, chapter 8)² from the London Fire Brigade however, demonstrates that the number of fires caused by smoking dwarfs the number of e-cigarette related fires.

7. “They’re just as harmful as smoking” (myth); “We don’t know the long-term effects” (true)

These are probably the most common statements that we hear people express on the topic of e-cigarettes and vaping. And it’s hardly surprising that these views are held given the predominantly negative, and sometimes conflicting, headlines in the press. There are numerous publications that I could have covered here but I focus on a review of biomarker data from McNeil et al. (2018, chapter 9)² demonstrating more than a 90% reduction in biomarkers of disease and, in many cases, levels similar to non-smokers. It’s true that we don’t know the long-term health effects, but based on what we do know, any

long-term effects will certainly be far less detrimental than tobacco smoking.

8. “They don’t help smokers to stop smoking”

Myth - although several reviews published on this subject exist with conflicting results, those designed specifically to explore the effects of e-cigarettes on smoking cessation (as reported in the 2018 Cochrane review)³ do report some encouraging trends although the quit rates reported in these studies are not dramatic. However, given that e-cigarettes are more popular than traditional medications for smoking cessation, this can mean a significant number of extra quitters at the population level.

9. “They may lead young people to start smoking”

Not supported. This statement is not supported by current UK data. Data from five different UK surveys looking at e-cigarette use in young people aged between 11-16 years shows that regular e-cigarette use is confined to those who smoke⁴. There is very little use among non-smokers. Although several surveys report that those who have tried an e-cigarette but never smoked at baseline are more likely to smoke at follow up, these studies cannot infer causality and a ‘common liability’ explanation is more likely.

References

¹Action on Smoking and Health. Use of E-cigarettes among adults in Great Britain 2018: [\[link\]](#)

²McNeil, A., Brose, LS., Calder, R., Bauld, L. & Robson, D. (2018): Evidence review of e-cigarettes and heated tobacco products 2018. A report commissioned by Public Health England: [\[link\]](#)

³ Hartmann-Boyce, J., McRobbie, H., Bullen, C., Begh, R., Stead, LF & Hajek, P. (2016). Electronic cigarettes for smoking cessation. Cochrane Database of Systematic Reviews. Issue 9. Art. No: CD010216. DOI: 10.1002/14651858.CD010216.PUB3. [\[link\]](#)

⁴Bauld, L, MacKintosh, A, Eastwood, B, Ford, A, Moore, G, Dockrell, M, Arnott, D, Cheeseman, H, McNeill, A. (2017). Young People's Use of E-Cigarettes across the United Kingdom: Findings from Five Surveys 2015-2017. *International Journal of Environmental Research and Public Health*, 14, 973; doi:10.3390/ijerph14090973. [\[link\]](#)