Population impact of e-cigarettes: recent evidence from the UK

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Summary

• Current e-cigarette use
• Impact on smoking prevalence
• UK harm reduction approach in context
• Concerns
• Conclusions
Current use of e-cigarettes by smoking status

(ASH Yougov survey, GB, 2016)

2.8 million current users

Never smokers
Ex-smokers
Smokers
Proportion of current e-cig users who smoke
(ASH Yougov survey, GB, 2016)
Proportion of e-cigarette and NRT users who are smokers ("dual users")

The majority of both e-cigarette and NRT users also smoke; proportions roughly about the same

N=2231 e-cigarette users and N=1232 NRT users of adults
Adult smoking prevalence in England

(General/Integrated Household Survey)
Adult smoking prevalence England

(Smoking Toolkit Study) Base: all adults

Graph shows prevalence estimate and upper and lower 95% confidence intervals
Support used in quit attempts England

*(Smoking toolkit study)* Base: all adults

<table>
<thead>
<tr>
<th>% of those trying to stop in past year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing</td>
</tr>
<tr>
<td>NRT OTC</td>
</tr>
<tr>
<td>Med Rx</td>
</tr>
<tr>
<td>NHS</td>
</tr>
<tr>
<td>E-cig</td>
</tr>
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</table>

**Method is coded hierarchically with smokers using more than one method classified into most intensive by the following scheme:**
1. Nothing
2. NRT OTC
3. E-cigarette
4. Med Rx
5. NHS

In updates until June 2015, NRT OTC was coded above e-cigarette - earlier figures have now been revised. See e-cigarette tracking slides for any use of different treatments.

NRT OTC: Nicotine replacement therapy bought over the counter; Med Rx: Prescription medication; NHS: NHS Stop Smoking Service; E-cig: E-cigarette.
Stopped smoking in past 12 months England

*(Smoking Toolkit Study)* Base: adults who smoked in last year

Graph shows prevalence estimate and upper and lower 95% confidence intervals
Prevalence of nicotine/cigarette use

Overall decline in smoking, smaller decline in nicotine use. Clear differentiation of nicotine market

N=88954 adults, decrease $p<0.001$ for cigarettes and $p<0.001$ for overall nicotine use
Regular e-cig use among children is confined to those who have smoked

‘Regular’ smoking prevalence (11-15 yrs) England *(Health & Social Care Information Centre, 2014)*
Separating the nicotine from the smoke

“Smokers smoke for the nicotine, but die from the tar”
Professor Mike Russell, Maudsley Smokers Clinic, 1979

Professor Michael Russell
1932-2009
### Table 4: European countries ranked by total TCS score in 2013

<table>
<thead>
<tr>
<th>2013 ranking (2010 ranking)</th>
<th>Country</th>
<th>Price (30)</th>
<th>Public place bans (22)</th>
<th>Public info. campaign spending (15)</th>
<th>Advertising bans (13)</th>
<th>Health warnings (10)</th>
<th>Treatment (10)</th>
<th>Total (100)</th>
</tr>
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<tbody>
<tr>
<td>1 (1)</td>
<td>UK</td>
<td>27</td>
<td>21</td>
<td>3</td>
<td>10</td>
<td>4</td>
<td>9</td>
<td>74</td>
</tr>
<tr>
<td>2 (2)</td>
<td>Ireland</td>
<td>24</td>
<td>21</td>
<td>1</td>
<td>12</td>
<td>5</td>
<td>7</td>
<td>70</td>
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<tr>
<td>3 (4)</td>
<td>Iceland</td>
<td>20</td>
<td>17</td>
<td>12</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td>66</td>
</tr>
<tr>
<td>4 (3)</td>
<td>Norway</td>
<td>20</td>
<td>17</td>
<td>12</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td>61</td>
</tr>
<tr>
<td>5 (4)</td>
<td>Turkey</td>
<td>21</td>
<td>19</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td></td>
<td>57</td>
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<tr>
<td>5 (6)</td>
<td>France</td>
<td>20</td>
<td>17</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>6</td>
<td>57</td>
</tr>
<tr>
<td>7 (13)</td>
<td>Spain</td>
<td>15</td>
<td>21</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>6</td>
<td>56</td>
</tr>
<tr>
<td>7 (7)</td>
<td>Malta</td>
<td>17</td>
<td>18</td>
<td>10</td>
<td>4</td>
<td>7</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>9 (7)</td>
<td>Finland</td>
<td>15</td>
<td>17</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>6</td>
<td>55</td>
</tr>
</tbody>
</table>
UK harm reduction approach: some key reports

• 2007 RCP report
• 2008 Beyond Smoking Kills
• 2013 NICE Harm reduction guidance
• 2014 2 PHE evidence reviews
• 2015 Smoking Still Kills & 3rd PHE evidence review
• 2016 RCP report
E-cigarettes: Public Health England's evidence-based confusion

Last week, Public Health England (PHE) reported what it described as a "landmark review" of evidence about e-cigarettes. The headline in their press release quoted their top-line finding—"E-cigarettes around 95% less harmful than tobacco". Kevin Fenton, Director of Health and Wellbeing at PHE, commented that, "E-cigarettes are not completely risk free but when compared to smoking, evidence shows they carry just a fraction of the harm". Indeed, the 95% figure was widely picked up in news media. The BBC, for example, reported with certainty that "E-cigarettes are 95% less harmful than tobacco". So what was the allegedly "game-changing" evidence that e-cigarettes are so safe?

In the "evidence update" published by PHE, written by Ann McNeill (King's College London) and Peter Hajek (Queen Mary University of London), the safety of e-cigarettes "in the light of new evidence" is summarised in this way: "While vaping may not be 100% safe, most of the chemicals causing smoking-related disease are absent and the chemicals that are present pose limited danger. It had previously been estimated that EC [e-cigarettes] are around 95% safer than smoking (10, 146). This appears to remain a reasonable estimate." The headline conclusion of the PHE report was a judgment relying on two references from 2014. One (reference 146) was a briefing report to the UK All-Party Parliamentary Group on Pharmacy. The other (reference 10) was a paper by David Nutt and colleagues published in European Addiction Research. It is from this paper that the 95% figure derives. McNeill and Hajek are clear about the importance of this work: "There is a need to publicise the current best estimate that using EC is around 95% safer than smoking." PHE immediately acted on this recommendation. But with undue haste.

It is worth reading the paper on which PHE has based its latest advice carefully. Nutt and colleagues describe how the Independent Scientific Committee on Drugs, which Nutt founded in 2010, convened an international expert panel to consider the "relative importance of different types of harm related to the use of nicotine-containing products". During a two-day workshop in July, 2013, the panel met in London to review the context of perceived harms from nicotine products, the range of products (including "electronic nicotine delivery system products"), and the criteria of harms. The group scored the products for harm, and weightings were applied to the results. Based on the opinions of this group, cigarettes were ranked as the most harmful nicotine product with a score of 99-6. E-cigarettes were estimated to have only 4% of the maximum relative harm. It is this result that yields the "95% less harmful" figure reported last week.

But neither PHE nor McNeill and Hajek report the caveats that Nutt and colleagues themselves emphasised in their paper. First, there was a "lack of hard evidence for the harms of most products on most of the criteria". Second, "there was no formal criterion for the recruitment of the experts". In other words, the opinions of a small group of individuals with no prespecified expertise in tobacco control were based on an almost total absence of evidence of harm. It is on this extraordinarily flimsy foundation that PHE based the major conclusion and message of its report.

The study led by Nutt was funded by Europharm Health and Lega Italiana Anti Fumo (LIAF). Riccardo Polosa, one of the authors of the Nutt paper, is the Chief Scientific Advisor to LIAF. In the paper, he reports serving as a consultant to Arbi Group Srl, an e-cigarette distributor. His research on e-cigarettes is currently supported by LIAF. Another author reports serving as a consultant to manufacturers of smoking cessation products. The editors of the journal added a note at the end of the paper warning readers about the "potential conflict of interest" associated with this work.

Tobacco is the largest single cause of preventable deaths in England—e-cigarettes may have a part to play to curb tobacco use. But the reliance by PHE on work that the authors themselves accept is methodologically weak, and which is made all the more perilous by the declared conflicts of interest surrounding its funding, raises serious questions not only about the conclusions of the PHE report, but also about the quality of the agency's peer review process. PHE claims that it protects and improves the nation's health and wellbeing. To do so, it needs to rely on the highest quality evidence. On this occasion, it has fallen short of its mission. —The Lancet
Concerns: public understanding..

- Of the relative harms of electronic cigarettes and tobacco cigarettes
- Of the relationship between nicotine and smoking tobacco
Nicotine in cigarettes does not cause cancer

Relative harm cigs/ecigs among adults

(*Internet cohort survey 2012-14*)

Relative harm cigs/ecigs among youth

(ASH Yougov Youth Surveys 2013-15)

<table>
<thead>
<tr>
<th>% endorsing response</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less harmful</td>
<td>73.6</td>
<td>66.4</td>
<td>66.7</td>
</tr>
<tr>
<td>Equally harmful</td>
<td>11.5</td>
<td>18.2</td>
<td>21.3</td>
</tr>
<tr>
<td>More harmful</td>
<td>1.2</td>
<td>1.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Don’t know</td>
<td>13.7</td>
<td>13.8</td>
<td>9.6</td>
</tr>
</tbody>
</table>

Relative harm cigs/ecigs among adults

(ASH Yougov adult surveys 2013-16)
Policy support by relative harm perceptions adults

(Internet cohort survey adults 2012-14)

Conclusions

• E-cigarette current usage increasing, approximately equal current and ex smokers
• E-cigarette regular usage largely confined to smokers and ex-smokers
• No evidence of renormalisation of smoking or “gateway” effects
• UK recognises harm reduction is an important component of an overall tobacco control strategy
• Risk perceptions generally poor
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