

18TH JUNE 2014

## E-cigarettes

### Summary

- Quitting smoking is the best way to protect your lung health.
- Quitting smoking at any age is beneficial.<sup>1</sup>
- There is currently not enough evidence to suggest the use of e-cigarettes as an effective smoking cessation tool over current recommended strategies including pharmacotherapy and clinical counselling. This could change as more research is published on this subject.
- While the number of toxins in an e-cigarette are fewer than those in traditional cigarettes, there are no long-term studies on the safety of e-cigarettes and concern has been expressed about the small particles inhaled when "vaping" and their health impact, particularly on youth.<sup>2, 3</sup>
- Lung Foundation Australia strongly urges relevant government agencies to further regulate access to e-cigarette devices and components, nicotine-filled cartridges, and non-nicotine cartridges.
- Research has shown the most effective way to quit smoking is to get ongoing support from a health professional, using a combination of counselling and medication.<sup>4</sup>

### What are e-cigarettes?

Electronic cigarettes (e-cigarettes) are battery powered, cigarette-shaped devices that are designed to produce a heated nicotine vapour to be inhaled. This nicotine is absorbed principally by the mouth instead of the lungs. The refillable cartridges of concentrated liquid often contain nicotine and can also be flavoured.

Currently in Australia, there is no regulatory framework to monitor quality control of the device or the liquid contents.

### Are e-cigarettes recommended for smoking cessation?

There are some smaller studies that indicate that e-cigarettes might have a role to play in smoking cessation or smoking reduction<sup>5, 6</sup>, but because of the lack of a consistent body of evidence, e-cigarettes are not recommended for smoking cessation by any Australian clinical guidelines or any government or regulatory body in Australia. Retail sale for this purpose is banned in Australia and Canada.

Due to the lack of evidence surrounding e-cigarettes, the International Association for the Study of Lung Cancer advises against recommending their use at this time.<sup>7</sup>

Research currently shows the most effective way to quit is to get ongoing support from a health professional, using a combination of counselling and medication.<sup>8</sup> At this point, there is not enough evidence to demonstrate the effectiveness of e-cigarettes as an aid to quit smoking and staying smoke free.<sup>9</sup>

Lung Foundation Australia continues to recommend what the evidence supports – pharmacotherapy in combination with counselling. This is particularly true for those with a respiratory ailment of any sort. Lung Foundation discourages inhalation of any foreign, non-prescribed substance into your lungs.<sup>10</sup>

## Are e-cigarettes healthier than normal cigarettes?

Vapour inhaled from an e-cigarette does not contain as many chemicals as a traditional cigarette. E-cigarettes may therefore have a role to play in tobacco harm minimisation or harm reduction for some people. The NICE harm reduction guidelines from 2013 acknowledge that e-cigarettes are likely to be less harmful than cigarettes<sup>11</sup> but at the same time this is offset by other potential risks, including potential technical and safety issues, unknown effects of long-term use and a marked lack of research.

Despite having fewer chemicals than a traditional cigarette, nicotine is still addictive. Therefore, e-cigarettes will not decrease a smoker's dependence on the drug. 'Vaping' (i.e. inhaling nicotine) will not break a smoker's habits either – users do not break the routine of putting something in their mouth. In fact, e-cigarettes make it easier to 'vape' more heavily for longer.

While a paper in *The Journal of Thoracic Oncology* warns there is no evidence showing whether long term exposure to e-cigarettes can be harmful<sup>12</sup>, nicotine stimulates adrenaline, consistently elevated levels of which can lead to heart disease, heart attack, and stroke.<sup>13</sup>

Anecdotal evidence suggests that because some people think e-cigarettes are a 'healthy' option,

they are more likely to 'vape' for longer periods of time, increasing dependence and health risks associated with nicotine addiction.

Public perception that e-cigarettes are a 'healthier' alternative to smoking should not be misunderstood to mean they are 'healthy'. Lung Foundation Australia recommends people quit smoking rather than try this option.

## Other risks

### *Lack of regulation*

Where nicotine liquids are not regulated, the quality control and risks to users are not known.<sup>14</sup> In some countries, there are no restrictions on which chemicals can be added. Labelling does not consistently indicate contents or strength of the nicotine and other chemicals.<sup>15</sup> Because e-cigarettes are becoming increasingly widespread, the Lung Foundation strongly urges relevant government agencies to further regulate access to e-cigarette devices and components, nicotine-filled cartridges, and nicotine-free cartridges.

### *Poisoning*

There are some reported cases of children being poisoned by drinking the nicotine liquid capsules by mistake.<sup>16</sup> In fact, in the USA, 41.7% of nicotine poisonings reported to Poisons Centres now come from exposures to e-cigarettes. Of these, poisonings of children under five account for 51.1%.<sup>17</sup> Nicotine liquid is a powerful neurotoxin. Tiny amounts, whether swallowed or absorbed through the skin, can cause vomiting, seizures or be fatal. A teaspoon of even highly diluted nicotine liquid can kill a small child.<sup>18</sup>

### *Visibility of addictive behaviour*

As e-cigarettes are visibly similar to traditional cigarettes, their use could normalise smoking as socially acceptable or 'healthy'; expose more children to the smoking habit; and hamper some smokers' efforts to quit.<sup>19</sup>

### **Alternative smoking cessation support**

There is no evidence supporting e-cigarettes as a safer or more effective method than existing, proven, registered, therapeutic quit-smoking methods and medicines.<sup>20</sup>

Lung Foundation Australia continues to recommend a smoking cessation strategy which includes clinical counselling together with nicotine replacement therapy or other evidence-based forms of pharmacotherapy.

### **Are they legal?**

#### *Overseas*

The U.S. Food and Drug Administration has released draft e-cigarette regulations that prohibit sales to minors, vending machine sales, and free samples. They mandate ingredient disclosure and require nicotine warning labels. There is still some uncertainty around what form any future regulations will take<sup>21</sup>. The United Kingdom has made selling them illegal to under-18s, and has plans to licence e-cigarettes as an aid to quitting smoking from 2016. At present they are not available on the National Health System, unlike other smoking cessation aids.<sup>22</sup>

### *In Australia*

- National laws govern nicotine-containing solutions.
- State laws govern e-cigarette devices and nicotine-free solutions.

### *National Regulations*

Nicotine can be absorbed in lethal doses through the skin.<sup>23</sup> Throughout Australia, nicotine liquids are classified as Schedule 7 (Dangerous Poison) except in preparations for therapeutic use. There are no nicotine liquids registered as therapeutic goods in Australia.<sup>24</sup> Therefore:

Sale of nicotine-containing solution for e-cigarettes is currently illegal in Australia under the Therapeutic Goods Act 1989.

Importation of nicotine for personal use does not fall under the ban. However, as a prescription-only medicine, those importing nicotine solutions must hold a prescription from a registered health practitioner, and there are restrictions on the quantity that can be imported.<sup>25</sup>

Those considering buying e-cigarette components or products online are warned by the Therapeutic Goods Administration (TGA) that:

Electronic cigarettes have not been evaluated for quality, safety or performance by the TGA... Consumers may inadvertently break the law, waste their money or risk their health when buying unregistered products online.<sup>26</sup>

More information about scheduling of nicotine can be found at The Poisons Standard (the SUSMP) at:

[http://www.tga.gov.au/industry/scheduling-poisons-standard.htm#.U55EA\\_mSz2H](http://www.tga.gov.au/industry/scheduling-poisons-standard.htm#.U55EA_mSz2H)

## State Regulations

While national laws govern nicotine liquids, e-cigarette devices and nicotine-free solutions are governed by state regulations<sup>27</sup>. These differ from state to state<sup>28</sup>. For further information about the regulations in your state/territory, call your relevant drugs and poisons unit. For contact details visit the TGA website:

<http://www.tga.gov.au/industry/scheduling-st-contacts.htm#.U5ZxiPmSz2E>.<sup>29</sup>

## Further information

To find out more about quitting smoking, please refer to our Better Living with Chronic Obstructive Pulmonary Disease: A Patient Guide, Chapter 6, available online at:

<http://lungfoundation.com.au/wp-content/uploads/2014/02/06.-Stopping-smoking-and-preventing-a-relapse.pdf>

To find out more about e-cigarettes, please refer to the Department of Health website, at: <http://www.tga.gov.au/consumers/ecigarettes.htm#supplying>.

<sup>1</sup> Fletcher, C. and Peto, R. 1977, *The natural history of chronic airflow obstruction*. BMJ, Vol. 1, pp. 1645-1648.

<sup>2</sup> Bistreich-Wolfe & Spangenberg 29 April 2014, *Electronic cigarettes may cause, worsen respiratory diseases, among youth, study finds*, RTI International, <http://www.rti.org/newsroom/news.cfm?obj=C6EFA34B-0757-4185-CE29DB92E8231C67> Accessed: 15/05/2014.

<sup>3</sup> Elsevier Ltd, 19 May 2014, *Safety dominates the debate on electronic cigarettes*, *The Lancet Respiratory Medicine*, [http://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(14\)70092-X/fulltext](http://www.thelancet.com/journals/lanres/article/PIIS2213-2600(14)70092-X/fulltext), or doi:10.1016/S2213-2600(14)70092-X, Accessed 21/05/2014.

<sup>4</sup> GOLD. *Global Strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease*. <http://www.goldcopd.com> Accessed 15/04/2014.

<sup>5</sup> Bullen, C. et al. 2013, *Electronic cigarettes for smoking cessation: a randomised controlled trial*, *Lancet*, [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)61842-5/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)61842-5/fulltext) and [http://dx.doi.org/10.1016/S0140-6736\(13\)61842-5](http://dx.doi.org/10.1016/S0140-6736(13)61842-5), Accessed: 14/05/2014.

<sup>6</sup> Australian Association of Smoking Cessation Professionals (AASCP) 2014, *E-cigarette information sheet*, <http://aascp.org.au>, Accessed: 15/05/2014.

<sup>7</sup> Cummings, K. et al, 2014, *E-Cigarettes and Cancer Patients*, *Journal of Thoracic Oncology*: Vol 9, Issue 4 pp.438-441

<sup>8</sup> GOLD. *Global Strategy for the diagnosis, management and prevention of chronic obstructive pulmonary disease*. <http://www.goldcopd.com>, Accessed 15/04/2014.

<sup>9</sup> Cummings, K. et al, 2014, *E-Cigarettes and Cancer Patients*, *Journal of Thoracic Oncology*: Vol 9, Issue 4 pp.438-441

<sup>10</sup> Cummings, K. et al, 2014, *E-Cigarettes and Cancer Patients*, *Journal of Thoracic Oncology*: Vol 9, Issue 4 pp.438-441

<sup>11</sup> National Institute for Health and Care Excellence (NICE) 2013, *PH45: Tobacco: harm-reduction approaches to smoking* <http://publications.nice.org.uk/tobacco-harm-reduction-approaches-to-smoking-ph45/glossary#nicotine-containing-products-2>, Accessed 30/04/2014.

<sup>12</sup> Cummings, K. et al, 2014, *E-Cigarettes and Cancer Patients*, *Journal of Thoracic Oncology*: Vol 9, Issue 4 pp.438-441

<sup>13</sup> Welsh, J, 2013, *The Incredible Cigarette\* That Doesn't Cause Cancer\*\** *Business Insider Australia*, <http://www.businessinsider.com.au/e-cigarette-health-effects-2013-5>, Accessed 26/03/2014.

<sup>14</sup> Richtlil, M., 23<sup>rd</sup> March 2014, *Selling a Poison by the Barrel: Liquid Nicotine for E-Cigarettes*, *New York Times* [http://www.nytimes.com/2014/03/24/business/selling-a-poison-by-the-barrel-liquid-nicotine-for-e-cigarettes.html?\\_r=1](http://www.nytimes.com/2014/03/24/business/selling-a-poison-by-the-barrel-liquid-nicotine-for-e-cigarettes.html?_r=1), Accessed 26/03/2014.

<sup>15</sup> European Lung Foundation, 2013, *E-Cigarettes*, <http://www.europeanlung.org/assets/files/en/publications/e-cigarettes.pdf>, Accessed 26/03/2014.

<sup>16</sup> Richtlil, M., 23<sup>rd</sup> March 2014, *Selling a Poison by the Barrel: Liquid Nicotine for E-Cigarettes*, *New York Times* [http://www.nytimes.com/2014/03/24/business/selling-a-poison-by-the-barrel-liquid-nicotine-for-e-cigarettes.html?\\_r=1](http://www.nytimes.com/2014/03/24/business/selling-a-poison-by-the-barrel-liquid-nicotine-for-e-cigarettes.html?_r=1), Accessed 26/03/2014.

