

## SELECT COMMITTEE ON TOBACCO HARM REDUCTION

Professor Emily Banks  
Responses to Questions on Notice from  
Hearing on Friday, 13 November 2020

**QUESTION ON NOTICE 4:** Why do young people move from e-cigarettes to smoking? If they're already getting nicotine through e-cigarettes why do they then move on to smoking, if that's what's happening? [Senator Siewert]

### Response: evidence on why young people move from e-cigarettes to smoking

As I mentioned during the hearing, our systematic review and meta-analysis was of the relationship of e-cigarette use to the uptake of combustible tobacco smoking.<sup>1</sup> It did not include a systematic review of the evidence on likely drivers of the increased risk of uptake observed among e-cigarette users. In response to the request, we have conducted a rapid scan of the literature in PubMed (search date: 16 November 2020), led by Dr Olivia Baenziger, using the search terms "e-cigarette" AND "uptake" AND "smoking" (yielding 82 results) and "e-cigarette" AND "uptake" AND "cigarette" (yielding 106 results). We also included points raised in the reviews summarised in our report.

A potential explanation that has been largely rejected on the basis of the evidence is “common liability” whereby the increased risk of future cigarette smoking is proposed to be fully explained by the shared propensity for people who use e-cigarettes to also smoke, through factors such as risk taking, impulsivity and novelty-seeking behaviour. As outlined in our report<sup>1</sup> and others<sup>2</sup> the observed relationship of e-cigarette use to future smoking persists following adjustment for the relevant factors, where possible; it also meets standard criteria for a direct causal relationship, rather than one that is explained by other factors.<sup>2</sup>

The relevant peer-reviewed literature indicates that the drivers of the observed increased risk of tobacco smoking uptake with e-cigarette use are not known for certain and are likely to be multifactorial – behavioural, physiological and social<sup>3</sup> – and consistent with the recognised complexity of health behaviours and addiction. Drivers considered in the published peer-reviewed literature as potential explanations for this relationship include:

- **Nicotine addiction** and a need to satiate cravings.<sup>2,4</sup> Nicotine is a highly addictive substance<sup>5</sup> and many e-cigarette products deliver high doses of nicotine, similar to or in excess of those delivered by regular smoking. Acute nicotine overdose or being “nic-sick” is a recognised adverse effect of high doses of nicotine consequent on e-cigarette use.<sup>6</sup> Nicotine is the main addictive chemical in tobacco cigarettes and individuals who are addicted to nicotine through e-cigarette use may be more vulnerable to taking up smoking as a source of nicotine.
- **Smoking renormalisation**, whereby e-cigarettes mimic behavioural (e.g. hand to mouth, puffing, inhalation and exhalation) and sensory (e.g. flavours similar to inhaling cigarettes) aspects of smoking, associated e-cigarette habits and movements, making the transition to combustible smoking more normalised or “natural”.<sup>2,7,8,9</sup>
- **Cognitive/ behavioural factors** including an increase in positive experiences related to and expectancies about cigarette smoking.<sup>10</sup>
- **Social factors:** ability to share cigarettes with peers, access cigarettes from peers and smoking for stress/ anxiety were among top reasons for transition from e-cigarettes to cigarettes in a US study of university students.<sup>11</sup>
- **Marketing** of e-cigarettes potentially leading to more positive attitudes to smoking and openness to taking up tobacco smoking.<sup>12</sup>

## References

1. Baenziger ON, Ford L, Yazidjoglou A, Joshy G, Banks E. E-cigarette use and combustible tobacco cigarette smoking uptake among non-smokers, including relapse in former smokers: umbrella review, systematic review and meta-analysis. *medRxiv* 2020.
2. Khouja JN, Suddell SF, Peters SE, Taylor AE, Munafo MR. Is e-cigarette use in non-smoking young adults associated with later smoking? A systematic review and meta-analysis. *Tob Control* 2020.
3. Soneji S, Barrington-Trimis JL, Wills TA, et al. Association Between Initial Use of e-Cigarettes and Subsequent Cigarette Smoking Among Adolescents and Young Adults: A Systematic Review and Meta-analysis. *JAMA Pediatr* 2017; **171**(8): 788-97.
4. Goel R, Durand E, Trushin N, et al. Highly reactive free radicals in electronic cigarette aerosols. *Chem Res Toxicol* 2015; **28**(9): 1675-7.
5. Stolerman IP, Jarvis MJ. The scientific case that nicotine is addictive. *Psychopharmacology* 1995; **117**(1): 2-10.
6. Grégoire M-C. Vaping risks for youth continue to emerge. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne* 2019; **191**(40): E1113-E4.
7. Dawkins L, Munafò M, Christoforou G, Olumegbon N, K. S. The effects of e-cigarette visual appearance on craving and withdrawal symptoms in abstinent smokers. *Psychol Addict Behav* 2016; **30**(1): 101-5.
8. Zare S, Nemati M, Y Z. A systematic review of consumer preference for e-cigarette attributes: Flavor, nicotine strength, and type. *PLoS One* 2018; **13**(3): e0194145.
9. Primack BA, Soneji S, Stoolmiller M, Fine MJ, Sargent JD. Progression to Traditional Cigarette Smoking After Electronic Cigarette Use Among US Adolescents and Young Adults. *JAMA Pediatr* 2015; **169**(11): 1018-23.
10. Wills TA, Gibbons FX, Sargent JD, Schweitzer RJ. How is the effect of adolescent e-cigarette use on smoking onset mediated: A longitudinal analysis. *Psychol Addict Behav* 2016; **30**(8): 876-86.
11. Hiler M, Spindle TR, Dick D, Eissenberg T, Breland A, Soule E. Reasons for Transition From Electronic Cigarette Use to Cigarette Smoking Among Young Adult College Students. *J Adolesc Health* 2020; **66**(1): 56-63.
12. Phua J, Jin SV, Hahm JM. Celebrity-endorsed e-cigarette brand Instagram advertisements: Effects on young adults' attitudes towards e-cigarettes and smoking intentions. *J Health Psychol* 2018; **23**(4): 550-60.