

Missing the elephant in the vaping transition room.

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Pre-print of rapid response to Coleman B et al Transitions in electronic cigarette use among adults in the Population Assessment of Tobacco and Health (PATH) Study, Waves 1 and 2 (2013-2105). *Tobacco Control* 2018; doi:10.1136/tobaccocontrol-2017-054174

Coleman et al's important report [1] on transitions in the vaping and smoking status of a nationally representative cohort of American 18+ adults who use electronic cigarettes (EC) from the PATH study provides rich data that can greatly advance our understanding of the natural history of EC use and their potential in harm reduction.

However, we were struck by the absence of emphasis in the report of what is perhaps its most important finding. If we examine the report's data and consider the net impact of vaping on the critical goals of having vapers stopping smoking and vaping non-smokers not starting to smoke, the findings are very disturbing and should strong reason for pause among those advocating e-cigarettes as a game-changing way of stopping smoking.

At Wave 2, 12 months on from Wave 1, of the cohort of 2036 dual users (EC + smoking) only 104 (5.1%) had transitioned to using only EC and another 143 (7%) had quit both EC and smoking for a combined total of 247 or 12.1%. Of the 896 exclusive EC users at Wave 1, 277 (30.9%) had stopped vaping at Wave 2. Together, 524 out of the 2932 EC users (17.9%) followed from Wave 1 might be considered to have had positive outcomes at Wave 2.

The other side of the coin however, shows that of the 2036 dual users at Wave 1, 886 (43.5%) relapsed to using cigarettes exclusively. In addition, among the 896 exclusive EC users from Wave 1, 109 (12.2%) had stopped vaping and were now smoking, with another 121 having resumed smoking as well as using EC (i.e. became dual users). Importantly, 502 of 896 (56%) exclusive e-cigarette users were those who had never been established smokers prior to using e-cigarettes. Alarming, of these 502 adults, 120 (23.9%) progressed from using only e-cigarettes to either dual use (54 or 10.8%) or smoking only (66 or 13.2%).

Taken together, 886 dual users in Wave 1 relapsed to become exclusive cigarette smokers in Wave 2, and 230 exclusive vapers in Wave 1 took up cigarette smoking in Wave 2 (dual use or exclusively cigarettes). Undoubtedly, these should be considered as negative outcomes.

The table below shows that for every person vaping at Wave 1 who benefited across 12 months by quitting smoking, there are 2.1 who either relapsed to or took-up smoking. Most disturbingly, in this adult cohort nearly one in four of those who had never been established smokers took up smoking after first using EC. Concern about putative gateway effects of ECs to smoking have been dominated by concerns about youth. These data showing transitions from EC to smoking in nearly a quarter of exclusive adult EC users with no histories of established smoking should widen this debate to consider adult gateway effects too.

By far the largest proportion of those with negative outcomes are those dual users who relapsed to smoking (886 or 43.5% of dual users). As the authors note in their discussion, many of these were infrequent EC users, possibly involved in transitory experimentation at Wave 1. If we add the 902 who were still dual using at Wave 2, then 1788 of 2036 dual users (87.8%) in this sample might be said to have been held in smoking (dual using or exclusive smoking) 12 months later compared to 12.1% dual users who may have benefitted by using ECs.

We would expect commercial interests in both the tobacco and EC industries would be more than delighted with these findings. However, from public health harm reduction perspective these results argue against EC being an effective harm reduction strategy, and point to their far stronger potential to both recruit smokers and hold many smokers in smoking.

Summary of e-cigarette transitions from Wave 1 to Wave 2 by cigarette smoking status (n=2932)		
Positive outcome at Wave 2 n=524 (17.9%)	Negative outcome at Wave 2 n=1116 (38%)	Remained the same n=1291 (44%)
143 dual users who quit EC and smoking	886 dual users who relapsed to smoking exclusively	902 dual users continuing as dual users
104 dual users who became EC users only	109 EC only but now smoking	389 EC users continuing as exclusive EC users
277 EC only who quit EC	121 EC only who progressed to dual use	

Reference

1. Coleman B et al Transitions in electronic cigarette use among adults in the Population Assessment of Tobacco and Health (PATH) Study, Waves 1 and 2 (2013-2105). Tobacco Control 2018; doi:10.1136/tobaccocontrol-2017-054174