E-Cigarette and COPD: Unreliable Conclusion About Health Risks

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In their recent paper, Bowler and colleagues[1] used data from two large observational studies to investigate the question of whether use of e-cigarettes (ECs) by patients at risk of, or with, COPD impacted respiratory health outcomes. The conclusion was that the use of ECs was associated with poorer health outcomes. Unfortunately, the evidence presented in the paper is inadequate to provide much confidence in this conclusion.

First, the authors have relied on poorly constructed measures of EC use, which makes it hard to determine if the reported association is real or merely the result of misclassification error. The authors relied on ever and current use of ECs to define exposure. While these measures have value for documenting trends in EC use, they are not as helpful as in evaluating whether or not ECs contribute to smoking cessation or health outcomes since it is impossible to differentiate smokers who may have tried an EC from those who used them frequently for an extended period. Accounting for the frequency of EC use is important since previous studies have shown that daily use of ECs is related to a greater probability of smoking abstinence, which in turn would be expected to improve COPD health outcomes.[2–4]

Another limitation of the study was failure to account for the type of EC used which is important since the type of EC used impacts nicotine delivery and the likely success smokers might have quitting[4] and likely varied over the six-year period of the study (2010–2016).

Finally, selection bias is an important potential confounder. While EC users were found to be more addicted and have a more prolonged exposure to cigarettes (i.e., pack/years), this would also be expected to be associated with poorer COPD outcomes. Controlling for baseline cigarette use attenuated the negative association with COPD outcomes suggesting that the patient's cigarette smoking history, not their use of ECs, could be the cause of poor COPD outcomes.

It is important to note that findings from this study differ from those of another study on the same topic.[5] Moreover, the potential risks and benefits of switching smokers to an alternative nicotine product were well articulated in the Lung Health Study.[6] We would strongly caution clinicians, public health experts, and policy-makers from reaching firm conclusions about the potential risks or benefits of EC use based on the studies reported to date.

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Compliance with Ethical Standards:

Conflict of Interest: *K. Michael Cummings is a Professor in the Department of Psychiatry and Behavioral Sciences and a member of the Hollings Cancer Center Cancer Control Program where he co-leads the tobacco control research program for the Medical University of South Carolina, Charleston, SC, USA. His current research which is focused on electronic cigarettes is funded by the National Institute of Health. Dr. Cummings has never received funding from a business or trade group involved the sale of electronic cigarettes. Dr. Cummings has received consulting fees and grant support from Pfizer for his work in smoking cessation. He has also received fees as a paid expert witness in litigation filed against cigarette manufacturers.*
R. Polosa is a full-time employee of the University of Catania, Italy. In relation to his work in the area of tobacco control, RP has received lecture fees and research funding from Pfizer and GlaxoSmithKline, manufacturers of stop smoking medications. He has also received support from The Consumer Advocates for Smoke-free Alternatives (CASAA) for publication and open access costs of one paper. He has also served as a consultant for Pfizer, Global Health Alliance for treatment of tobacco dependence, ECITA (Electronic Cigarette Industry Trade Association, in the UK), Arbi Group Srl., and Health Diplomat (consulting company that delivers solutions to global health problems with special emphasis on harm minimization). Lectures' fees from a number of European electronic cigarette industry and trade associations (including FIVAPE in France and FIESEL in Italy) were directly donated to vapers advocacy no-profit organizations. He is also currently involved in the following pro bono activities: scientific advisor for LIAF, Lega Italiana Anti Fumo (Italian acronym for Italian Anti Smoking League) and for the Consumer Advocates for Smoke-free Alternatives (CASAA); Chair of the European Technical Committee for standardization on "Requirements and test methods for emissions of electronic cigarettes" (CEN/TC 437; WG4).

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