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2016 Surgeon General Report on E-cigarettes in youth was based more on fiction than facts according to a recent review published in the Harm Reduction Journal

<https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-017-0187-5>

The study, authored by Prof. Riccardo Polosa, Dr. Christopher Russell, Dr. Joel Nitzkin, and Dr. Konstantinos Farsalinos, found that data used in the report to raise concerns about the health risks of e-cigarettes and the apparent epidemic of e-cigarette use by youth were exaggerated in ways to mislead people into concluding that the marketing and use of e-cigarettes is a public health crisis.

Far from being a public health crisis, the authors found that data in the report actually reveal that:

- Multiple years of nationally representative surveys indicate the majority of e-cigarette use among U.S. youth is either infrequent or experimental, and negligible among never-smoking youth.
- The sharpest declines in U.S. youth smoking rates have occurred as e-cigarettes have become increasingly available.
- A largest majority of the very small proportion of U.S. youth who said that they had used an e-cigarettes on a regular basis, actually consume nicotine-free e-liquids.

According to Dr. K. Michael Cummings, Professor in the Department of Psychiatry and Behavioral Sciences at the Medical University of South Carolina, no one can fault the Surgeon General for wanting to protect America's youth from using tobacco products, but the suggestion that e-cigarettes pose a grave public health crisis is far from reality. The truth is most of those using e-cigarettes today are adults, many former smokers who have abandoned their cigarettes for a less dangerous alternative. "The credibility of Surgeon General's Report should not be compromised for political correctness. We all benefit when policy decisions are based on facts not fiction" said Cummings.

According to the study's authors, most of the evidence presented in the Surgeon General's discussion of nicotine harm is not applicable to e-cigarette use, because it relies almost exclusively on exposure to nicotine in cigarette smoke and not to nicotine present in e-cigarette aerosol emissions. Moreover, the literature referenced in the Surgeon General's report describes effects in adults, not youth, and in animal models that have little relevance to real-world e-cigarette use by youth. While the Surgeon General's Report is an excellent reference document for the adverse outcomes due to nicotine in combination with several other toxicants *present in tobacco smoke*, it fails to address the risks of nicotine decoupled from tobacco smoke constituents, yet makes sweeping claims about e-cigarettes and nicotine in general.

The Surgeon General's Report exaggerates the toxicity of the principle components of liquids used in e-cigarettes, propylene glycol (PG) and vegetable glycerin (VG), by focusing on experimental conditions that do not reflect use in the real world and provides little discussion of

emerging evidence that e-cigarettes may significantly reduce harm to smokers who have completely switched.

Lead author, Riccardo Polosa - Professor in the Department of Clinical and Experimental Medicine at the University of Catania – stated: "It took a lot of courage for us to criticize the US Surgeon General, but the Report was so misleading and so evidence-baseless that it demanded critical appraisal. While giving exaggerated emphasis to the risk of e-cigarettes, the Report failed to acknowledge that these products are a much less harmful alternative to cigarettes and that the data to date does not show them to be a threat for young people. This is a very important health issue. With cigarettes killing over 40,000 Americans a month any failure to maintain high scientific standards in favor of an abstinence-only agenda has huge potential to add to the death toll. We hope that future Reports will provide a more accurate reflection of the available research."

The authors point out that reports of the US Surgeon General are taken as authoritative, often seen as on par with those of the Royal College of Physicians in the UK. Yet in this case the interpretation of the science was so stilted as to call into question the scientific integrity of the US Surgeon General's Report.

The next U.S. Surgeon General should adhere much more to the science than to ideology, and consider the possibility that future generations of young Americans will be less likely to start smoking tobacco because of, not in spite of, the availability of e-cigarettes.

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NOTES for editors:

Riccardo Polosa, Christopher Russell, Joel Nitzkin and Konstantinos E. Farsalinos. A critique of the US Surgeon General's conclusions regarding e-cigarette use among youth and young adults in the United States of America. *Harm Reduction Journal*. 2017;**14**:61.
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Christopher Russell is a behavioural psychologist and tobacco harm reduction researcher at the Centre for Substance Use Research, Scotland (UK).

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