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**Re. Modeling the Effects of E-Cigarettes on Smoking Behavior: Implications for Future Adult Smoking Prevalence**

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Running Head: Assessing Harm of E-Cigarette Use

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To the Editor:

Cherng et al. (2016) recently published a simulation-based study that estimated the effect of electronic cigarette (e-cigarette) use on the future prevalence of combustible, or traditional, cigarette smoking.<sup>1</sup> We appreciate that the authors addressed this topic of growing global public health importance. However, we disagree with the authors' choice of a key parameter in their primary analysis: the probability of cigarette smoking initiation among youth e-cigarette users. Their choice of this parameter is inconsistent with a growing body of scientific evidence and limits the usefulness of their overall analysis.

Cherng et al. assumed e-cigarette use among youth does not affect the probability of cigarette smoking initiation. Yet, three recently published longitudinal studies involving a total of 5,562 adolescents and young adults all concluded e-cigarette use among never cigarette smokers significantly increased the probability of subsequent cigarette smoking initiation.<sup>2-4</sup> This estimated increase for each of the three studies was 4.7%, 14.1%, and 27.9%, respectively. Using random-effects meta-analysis, we calculated that the pooled odds ratio of cigarette smoking initiation equaled 2.5 (95% confidence interval: 1.5 to 4.0) for e-cigarette users, compared to non-e-cigarette users, adjusting for multiple known demographic, psycho-social, and behavioral risk factors.

Based on the 2014 intercensal population estimate and nationally representative data from the National Youth Tobacco Survey and National Health Interview Survey, 3.1 million adolescents and young adults ages 12-24 had never smoked cigarettes and had ever used e-cigarettes in 2014. Applying the increased probability of cigarette smoking initiation—estimated from the three longitudinal studies—to this population, between 148,000 and 876,000 *more* adolescents and young adults would initiate cigarette smoking. Although the sensitivity analysis performed by

Cherng et al. varied the increased probability of cigarette smoking initiation among e-cigarette users, the prevalence of cigarette smoking remained virtually unchanged because the denominator of prevalence is the size of the entire US population of 18-75 year olds (225 million people in 2014). Yet, it is crucial not to ignore these several hundred thousand more young cigarette smoking initiators each year. Each young cigarette smoking initiator will lose a dozen or more years of life, on average, if he or she becomes a lifelong nicotine-addicted cigarette smoker.<sup>5</sup>

In conclusion, the assumptions of Cherng et al. around cigarette smoking initiation among youth e-cigarette users substantially undermines the usefulness of their simulation model and its results. When we measure the harms of e-cigarette use based on the most up-to-date scientific evidence, it will be possible to directly measure the balance of benefits and harms of e-cigarette use.

Editor's Note: The authors' response to this letter appears on p. xxx.

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