**S1 Appendix. E-Cigarette-Associated Δ Transition Probability of Cigarette Smoking Cessation**

Let A equal a set of age groups. For age group a ∈ A, let quita,aid equal the probability of cessation using pharmaceutical aids, quita,no aid equal the probability of cessation not using pharmaceutical aids, quita,e-cig equal the probability of cessation using e-cigarettes, quita,no e-cig equal the probability of cessation not using e-cigarettes, and ORa equal the odds ratio of cessation among current cigarette smokers interested in quitting who used e-cigarettes compared to those who did not use e-cigarettes. Pharmaceutical aids included: nicotine patch; nicotine gum or lozenge; nicotine containing nasal spray or inhaler; prescription pill such as Chantix, Varenicline, Zyban, Bupropion, or Wellbutron.

By definition, the odds ratio, ORa, equals the ratio of (1) the ratio of the probability of cessation among current cigarette smokers interested in quitting who used e-cigarettes, $quit\_{a,e-cig},$ and its complement (2) the ratio of the probability of cessation among current cigarette smokers interested in quitting who did not use e-cigarettes, $quit\_{a,no e-cig}$ and its complement. Conservatively, we set quita,no e-cig to equal quita,aid. Then, solving for quita,e-cig:
$$quit\_{a,e-cig}=\frac{OR\_{a} ×quit\_{a,aid}}{1-quit\_{a,aid}+OR\_{a} ×quit\_{a,aid}}. \_{}$$

We then estimated the difference in the probability of cigarette smoking cessation at 6 months between current e-cigarette users and non-current e-cigarette users as the weighted average of (1) the difference in the probability of cessation using e-cigarettes (quita,e-cig) and the probability of cessation using a pharmaceutical aid (quita,aid) and (2) the difference in the probability of cessation using e-cigarettes (quita,e-cig) and the probability of cessation using no pharmaceutical aid (quita,no aid). The weight for (1) equaled the proportion of current cigarette smokers with a past-year quit attempt who used a pharmaceutical aid (pa). The weight for (2) equaled 1 minus the proportion of current cigarette smokers with a past-year quit attempt who used a pharmaceutical aid (1-pa).

$$∆ prob. cessation\_{a}=p\_{a}×\left(quit\_{a,e-cig}- quit\_{a,aid}\right)+\left(1 - p\_{a}\right)×\left(quit\_{a,e-cig}- quit\_{a,no aid}\right)$$

S1 Table 1 presents parameter values for the estimation of the difference in the probability of cigarette smoking cessation at 6 months between current e-cigarette users and non-current e-cigarette users, Δ probability cessationa.

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| **S1 Table 1. Parameters for Estimation of Difference In The Transition Probability Of Cigarette Smoking Cessation At 6 Months Between Current E-Cigarette Users And Non-Current E-Cigarette Users (%)** |
| Parameter | Notation | Age Range  | Point Estimate (95% CI) | Source  |
| Proportion Of Current Cigarette Smokers With a Past-Year Quit Attempt Who Used A Pharmaceutical Aid During Quit Attempt\* (%) | pa | 25-34 | 25.9 (21.5, 30.2) | 2010 NHIS |
| 35-49 | 39.5 (35.0, 44.0) |
| 50-69 | 39.1 (34.4, 43.9) |
| Probability of Cigarette Smoking Cessation ≥6 Months Among Current Cigarette Smokers Who Seriously Tried to Quit and Used A Pharmaceutical Aid During Quit Attempt (%) | quita, aid | 25-34 | 8.1 (5.5, 10.8) | Messer et al.[1] |
| 35-49 | 9.3 (7.9, 10.6) |
| 50-69 | 8.3 (6.6, 10.0) |
| Probability of Cigarette Smoking Cessation ≥6 Months Among Current Cigarette Smokers Who Seriously Tried to Quit and Did Not Use A Pharmaceutical Aid During Quit Attempt (%) | quita, no aid | 25-34 | 7.9 (6.9, 8.9) | Messer et al.[1]  |
| 35-49 | 5.2 (4.5, 5.8) |
| 50-69 | 6.4 (5.5, 7.3) |
| Odds Ratio of Quitting Smoking Among Smokers with an Interest in Quitting | ORa | 25-69 | 0.86 (0.60, 1.23) | Kalkhoran & Glantz [2] |

Note: CI=confidence interval; OR=odds ratio.

Finally, we estimated the variance of Δ probability cessationa by performing the bootstrap method N=100,000 times. S1 Table 2 shows the point estimates and 95% confidence intervals of Δ probability cessationa.

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| **S1 Table 2. Age-Group-Specific Point Estimate and 95% CI of Δ Probability Cessation (%)** |
| Parameter | Notation | Age Range  | Point Estimate (95% CI) |
| Difference In The Transition Probability Of Cigarette Smoking Cessation At 6 Months Between Current E-Cigarette Users And Non-Current E-Cigarette Users (%) | Δ prob. cessationa | 25-34 | -0.92 (-3.73, 2.27) |
| 35-49 | 1.26 (-1.58, 4.11) |
| 50-69 | 0.05 (-2.55, 2.77) |

**References**

1. Messer K, Trinidad DR, Al-Delaimy WK, Pierce JP. Smoking Cessation Rates in the United States: A Comparison of Young Adult and Older Smokers. Am J Public Health. 2008;98: 317–322. doi:10.2105/AJPH.2007.112060

2. Kalkhoran S, Glantz SA. Modeling the Health Effects of Expanding e-Cigarette Sales in the United States and United Kingdom: A Monte Carlo Analysis. JAMA Intern Med. 2015;175: 1671–1680. doi:10.1001/jamainternmed.2015.4209