

Supplement 6: Comparison with other studies

Our results are consistent with the results from other existing e-cigarette models.

In a model of the US, in Scenario 4 of Cherng et al. (2016)¹, a 20% increase in cessation rate led to a reduction of 0.8 percentage points in the smoking prevalence (from 13.4% to 12.6%, i.e. a 6% relative reduction) over 50 years in the US. In the main SGUS variant of our model, the ratio of the proportion of current smokers converting to vaping only to the proportion of current smokers quitting cigarettes (i.e. the ratio of C→E to C→Q) varies from 8.0% to 17.7% for age 11–75 years, and under ELF, the cigarette prevalence including dual users increases by 0.2 percentage points (from 14.2% to 14.4%, i.e. a 1% relative increase). Under the alternative model in which everyone stopping use of e-cigarettes moves to the ex-smoker group, the cigarette prevalence is reduced by 1.7 percentage points (from 14.2% to 12.5%, i.e. a 12% relative reduction). The finding from Cherng et al. thus lies within the range of the results of the models we considered in the main text and the sensitivity analysis.

For the SGUK variant, our result for ELF is also comparable with the result for the scenario with e-cigarette introduction from Hill et al. (2017)². In Hill et al., over the 50 year window 2000–2050, the smoking prevalence in the UK is expected to decline by 2.7 percentage points, from 12.4% to 9.7%, a 22% relative decrease. In our model, in 50 years under ELF in the SGUK variant, the smoking prevalence in Singapore drops by about 3.9 percentage points, from 14.2% to 10.3%, i.e. a 27% relative decrease.

Also, our results show that ELF could reduce smoking prevalence and produce QALY gains compared with the baseline, SQ, especially when the adoption of e-cigarettes is primarily from current smokers such as in the SGUK variant. This is consistent with the findings from Kalkhoran and Glantz (2015)³, Levy et al. (2017)⁴, Warner and Mendez (2018)⁵. However, under high rates of e-cigarette initiation, such as in the SGUS variant where the e-cigarette initiation rate is high compared with the rate of current smokers switching to e-cigarettes and with the cigarette initiation rate in Singapore, ELF could result in no reduction in smoking prevalence and QALY loss. This is in line with the results from Soneji et al. (2017)⁶. On the other hand, EP, restricting e-cigarettes only to smokers, results in reduced smoking prevalence and QALY gains regardless of the variants. These results align with the findings from Kalkhoran and Glantz (2015)³, Levy et al. (2017), and Petrović-van der Deen et al. (2019)⁷.

Replacing cigarettes by e-cigarettes as in the scenarios with Smoke Free Generation and a laissez-faire approach to e-cigarettes will reduce smoking prevalence and result in QALY gain even though the magnitude of the impact depends on the level of e-cigarette initiation, for instance the benefit is less in the SGUS variant where there are more never smokers initiating e-cigarette use. This result agrees with that from Levy et al. (2018)⁸.

References

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