LETTER

Possible Methodological Reason for the Finding That "Neither Tax Increase nor Reimbursement Reduced Health Disparities": Comment on the Article by Over et al. (2014)

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Over et al. (2014) analyzed the socioeconomic status (SES)-specific cost-effectiveness of two tobacco control policies that were introduced in the Netherlands in 2011. This is a valuable analysis that estimates both the health impact and cost-effectiveness of a single tobacco tax increase of 5% and reimbursement of smoking cessation support, while considering SES measured by education level. It is encouraging to see disease modeling and cost-effectiveness analyses addressing heterogeneity by social status group, as results may help inform policies aiming to reduce social inequalities that continue to persist in tobacco use and related diseases (David, Esson, Perucic, & Fitzpatrick, 2010).

Over et al. found both tobacco tax and reimbursement to be cost-effective, with the reimbursement policy generating the largest overall health gain (a function perhaps of the modest level of the tax increase). More favorable health gains and cost-effectiveness ratios (for both policies) were found in the higher SES groups, which led the authors to conclude that neither policy reduced health disparities in smoking. Findings were, however, not stratified by age—and so we suspect that such stratification may well result in more favorable "pro-equity" results. With more recent birth cohorts being more likely to have higher levels of education, older people are likely to be overrepresented in the low to lowest education groups. Indeed, this pattern has been described for the Netherlands (Centraal Bureau voor de Statistiek, 2005). Older people have less potential quality-adjusted life year (QALY) gain from quitting smoking. Therefore, we suspect the less favorable health gains (and consequently cost-effectiveness ratios) found by Over et al. were likely due to confounding by age. Perhaps the authors could consider presenting additional analyses stratified by age?

Future research could also look to more explicitly include parameter uncertainty in the analyses. For example, there is uncertainty in price elasticities from a tax, population distributions by treatment, etc., and these uncertainties will not be perfectly correlated across age and educational strata. One way to capture this "input parameter" uncertainty is with Monte Carlo simulation that repeatedly samples from all input parameter uncertainty distributions, recalculating the QALYs, cost and cost-effectiveness thousands of times, to give a range. We suspect that the differences by SES presented by Over et al (non-stratified by age) in QALYs, cost and cost-effectiveness may have widely overlapping uncertainty intervals had this been done.

Finally, we note that simulation modeling offers a unique tool to also evaluate the (cost-) effectiveness of a number of "what-if" policy scenarios on reducing social inequalities in health (Smith, Smith, Harper, Manuel, & Mustard, 2014). For example, "what-if" reimbursement of smoking cessation support was not cancelled at the end of 2011 or "what-if" reimbursement of cessation support was only offered to lowest SES groups? Would this have reduced health disparities in smoking? Or "what-if" an annual on-going increase in tobacco tax was introduced? There is clearly plenty of scope for further modeling around the cost-effectiveness of tobacco control interventions and their impacts on health equity.

DECLARATION OF INTERESTS

None declared.

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