

# The budget impact analysis of smoking cessation interventions in Estonia

## Summary

**Objective:** To estimate the effectiveness, safety and cost-effectiveness of varenicline, bupropion, nicotine replacement therapy (NRT) and e-cigarettes in long-term smoking cessation, and the budgetary impact of the interventions from the perspective of Estonian Health Insurance Fund.

**Methods:** The effectiveness, safety and cost-effectiveness of the interventions were estimated based on a systematic literature review conducted in the PubMed database in July-August 2019 (updated in November 2019). A simple closed-cohort budget impact model was constructed in Microsoft Excel. For informing the size of the target group, the current usage of interventions in Estonia was estimated based on sales and prescription statistics, and the cross-sectional study about national smoking cessation counselling services. To assess the impact of funding on the use of smoking cessation aids a targeted literature search was conducted.

**Results:** Varenicline, bupropion and NRT are effective in smoking cessation, helping 1.5 to 2.5 times more likely to quit smoking compared to placebo. There is no evidence that the interventions would increase the risk of serious adverse events. Based on 48 studies, varenicline, bupropion and NRT are generally cost-effective or cost-saving compared to unaided quitting, suggesting that these conclusions might apply for Estonia as well. Although nicotine-containing e-cigarettes might be effective for the cessation of cigarette smoking compared to no-nicotine e-cigarettes, the evidence is based only on two randomised controlled trials and there is a risk of smoking continuation with e-cigarettes. The evidence about the safety of other substances in e-cigarettes and of the heating process is scarce. Therefore, e-cigarettes were not considered a suitable method for smoking cessation and were omitted from the budget impact analysis.

Based on the evidence about effectiveness, safety and cost-effectiveness of the interventions, three funding scenarios were proposed: 1) 50% reimbursement rate to varenicline and bupropion 2) 50% reimbursement rate to varenicline, bupropion and prescription NRT patch, and 3) 75% reimbursement rate to varenicline, bupropion and prescription NRT patch. In all scenarios, binding the funding to the attendance of smoking cessation counselling was recommended. Based on the estimated target group of 1380 in 2018 and assuming the funding starts in 2020, the cost of medicines and counselling was estimated €145,000 for scenario one, €273,000 for scenario two and €445,000 for scenario three in 2020 (€177,000; €332,000 and €541,000, respectively, in 2024). The drug costs constituted 53%, 54% and 63%, respectively. The estimates were highly sensitive to the size of the target group. It should be noted, that the budget impact accounted only direct costs and not possible cost savings from avoiding smoking-related diseases.

**Conclusions:** Varenicline, bupropion and NRT are effective, safe and cost-effective methods for smoking cessation and affordable means for reducing the harms associated with smoking. E-cigarettes are not recommended for smoking cessation due to the scarcity of reliable evidence about the effectiveness and safety of the intervention.

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