

Relative efficacy, safety and cost-effectiveness of nicotine replacement therapy, bupropion and varenicline for smoking cessation in Norway.

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Objective

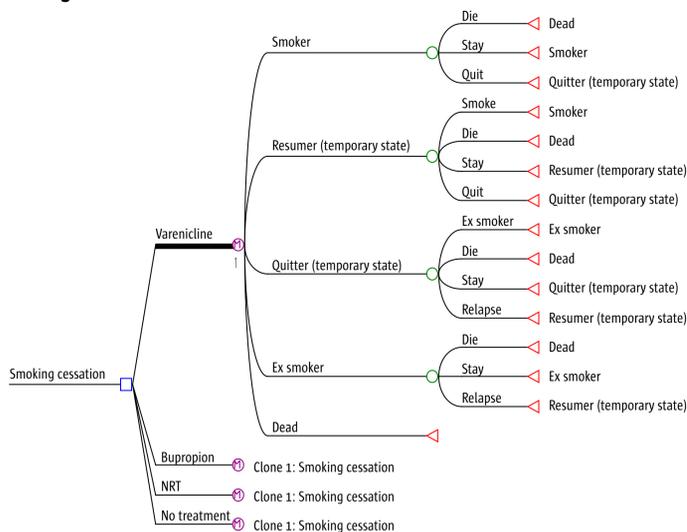
To evaluate the relative efficacy, safety and cost-effectiveness of nicotine replacement therapy (NRT), bupropion and varenicline in order to inform the development of a new Norwegian treatment guideline for smoking cessation in primary care. Results will also be used for reimbursement decisions.

Methods

With respect to efficacy and safety, we conducted a systematic review of the literature. We included systematic reviews and randomised controlled trials. The quality of the documentation was evaluated using GRADE.

Cost-effectiveness was assessed through a probabilistic Markov model, with the health states “Smoker”, “Quit smoking less than five years ago”, “Quit smoking more than five years ago”, “Resumed smoking” and “Dead”, cf. figure 1.

Figure 1 Model structure



Findings

Both varenicline, bupropion and NRT will improve smoking cessation at 52 weeks compared to placebo, RR 2.33 (95 % CI 1.95 to 2.80), RR 1.69 (95 % CI 1.53 to 1.85), RR 1.58 (95 % CI 1.50 to 1.66). Varenicline will improve smoking cessation compared to bupropion, RR 1.46 (95 % CI 1.18 to 1.81), and will probably improve smoking cessation compared to nicotine patch RR 1.31 (95 % CI 1.01 to 1.71). We are uncertain if bupropion will improve or decrease smoking cessa-

tion compared to NRT because the quality of the evidence is very low. Findings on efficacy are presented in table 1.

Varenicline probably leads to more nausea than placebo and bupropion. For other adverse events we either lack information or the quality of the evidence is too low to draw conclusions.

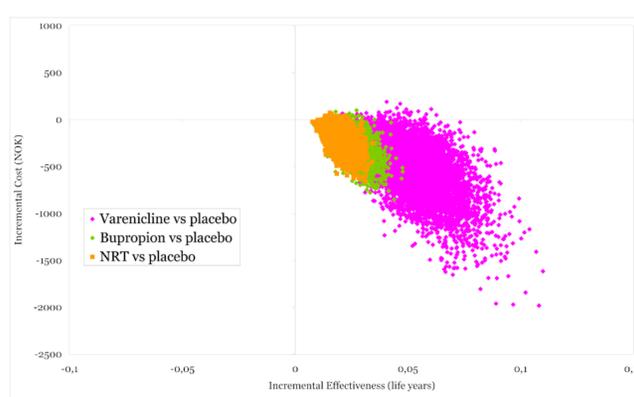


Table 1 The evidence of effect of drugs for smoking cessation

Continuous abstinence Follow up: 6 to 12 months	Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)	
Placebo 104 per 1000	Nikotine replacement therapy 164 per 1 000 (156 to 173)	RR 1.58 (1.5 to 1.66)	43 040 (111)	⊕⊕⊕○ moderate
106 per 1000	Bupropion 179 per 1 000 (162 to 196)	RR 1.69 (1.53 to 1.85)	11 440 (36)	⊕⊕⊕○ moderate
112 per 1000	Varenicline 261 per 1 000 (218 to 314)	RR 2.33 (1.95 to 2.8)	2 582 (6)	⊕⊕⊕⊕ high
Nikotine replacement therapy 98 per 1 000	Bupropion 139 per 1 000 (45 til 359)	RR 1.45 (0.50 to 4.18)	541 (2)	⊕○○○ very low
Bupropion 139 per 1 000	Varenicline 203 per 1 000 (165 til 249)	RR 1.46 (1.18 to 1.81)	1 878 (3)	⊕⊕⊕⊕ high

In our cost-effectiveness analysis, all treatments were dominant (less costly and more effective) compared to placebo. Treatment with respectively NRT, bupropion and varenicline will result in 0.02, 0.09 and 0.14 life years gained and savings of NOK 187, NOK 875 and NOK 1 365 per person treated compared to placebo. No treatment, NRT and bupropion are all dominated by varenicline. Varenicline is the most cost-effective option, with the highest health gain and the largest savings, cf. figure 2.

Figure 2 Cost-effectiveness scatter plot of NRT, bupropion and varenicline compared to placebo



Conclusions

Nicotine replacement therapy, bupropion and varenicline are all effective compared to placebo. Serious adverse events are poorly documented. All treatments can be considered cost-effective compared to no treatment. Varenicline is likely to be the most cost-effective option.

References

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Hagen G, Wisløff T, Klemp M, Cost-effectiveness of varenicline, bupropion and nicotine replacement therapy for smoking cessation, Report Nr 10–2010 from the Norwegian Knowledge Centre for the Health Services