Canadian Agency for Drugs and Technologies in Health

Health Technology Assessment HTA

Pharmacologic-based Strategies for Smoking Cessation

Issue

Tobacco smoking is a principal and modifiable risk factor for cancer, respiratory disease, and cardiovascular disease. Approximately 19% of Canadians aged 15 years and older are current smokers; however over one-third of these individuals express an intention to quit in the next 30 days. Most smokers who attempt to quit without cessation aids are usually unsuccessful in the long term. There is uncertainty as to the optimal smoking cessation strategy, and most Canadian drug plans do not reimburse the cost of smoking cessation medications. Given the significant number of preventable deaths, and a strong desire by smokers to quit, decision-makers require evidence-based information to inform optimal smoking cessation strategies and guide reimbursement decisions.

Condition

Smoking can be both a physical and mental addiction. Nicotine, the addictive chemical component of tobacco products, triggers the release of a chemical (dopamine) in the brain, which causes individuals to have an elevated mood, feel more relaxed, and at the same time, feel more alert. When nicotine levels start to fall, smokers start to experience cravings and withdrawal symptoms. The urge to smoke is also reinforced by exposure to stimuli, settings, or situations that become associated with smoking.

Technology

- Nicotine replacement therapy (NRT) replaces nicotine that is derived from smoking or tobacco use and is administered in various forms, including patch, gum, inhaler, lozenge, spray, and sublingual tablets.
- Bupropion is an atypical antidepressant that inhibits the reuptake of norepinephrine and dopamine. The mechanism by which it helps patients stop smoking is unknown.
- Varenicline is a nicotinic receptor partial agonist with partial-antagonist properties. It reduces the cravings for, and decreases the pleasurable effects of, cigarettes and other tobacco products.

Methods

To compare pharmacological agents with or without behavioural support programs for smoking cessation in adults, a systematic review with meta-analyses and an economic evaluation were carried out. A budget impact analysis and an examination of current public funding and planning issues were also performed.

Results

A total of 143 relevant randomized controlled trials and 25 economic studies were included. Findings for 13 research questions were produced, and knowledge gaps and barriers were identified. Intervention tools will encourage evidence-based optimal smoking cessation strategies.

Implications for Decision-Making

- **All pharmacotherapies reviewed are effective in helping the general population quit smoking.** Varenicline; bupropion; and the nicotine patch, gum, lozenge and inhaler, are all more effective than placebo at six months and one year follow-up.
- Pharmacotherapy is effective in assisting smokers with cardiovascular disease or chronic obstructive pulmonary disease to successfully quit. Further research in other subpopulations is needed.
- Based on evidence from the included studies, the long-term benefit of adding behavioural support to bupropion and NRT is unclear. Further research is needed.
- Few studies examining the long-term benefit of combining pharmacotherapies were found. Evidence of the long-term benefits and safety of combination therapy remains uncertain.
- Economic modelling demonstrated that reimbursing smoking cessation therapies may be a cost-effective option for a health authority or a third-party payer compared with not doing so. Cost is a barrier to accessing smoking cessation medication when a coverage plan does not exist.

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