



Drugs for Smoking Cessation

Information for Health Professionals

Smoking is one of the major risk factors for cancer, respiratory disease, and cardiovascular disease. Fortunately, it is a modifiable risk factor – quitting smoking can help to prevent illness and death. Unfortunately, quitting is easier said than done.

While tobacco smoking continues to decline in Canada, approximately 18% of Canadians are smokers, and one in three of these people want to quit within in the next 30 days. However, evidence suggests that many of these people will fail in their attempts to quit smoking without the help of smoking cessation aids.

More than 30% of hospital beds are occupied by adults who are there as a consequence of smoking. Given the high number of preventable deaths and the fact that many patients want to quit, there is a need to evaluate strategies for smoking cessation.

In 2010, CADTH conducted a comprehensive review of drug therapies for smoking cessation.¹ This included a systematic review of the literature, meta-analysis, economic evaluation, budget impact assessment, and examination of health services impact. This review found that nicotine replacement therapy (NRT), bupropion, and varenicline are all effective in helping the general population of smokers to quit using tobacco.

In 2016, a rapid evidence review aimed to locate any new evidence published since 2010.² This review found a few studies showing no benefit for NRT, but these studies were generally small and focused on specific groups of people; for example, adolescents, people using smokeless tobacco, or recent quitters attempting to prevent relapse. A large trial in the general population of smokers showed that NRT was effective for smoking cessation.

Drugs for Smoking Cessation. Adapted with permission from RxFiles, www.rxfiles.ca.

Regier L, Jensen B, Chan W. Tobacco / smoking cessation pharmacotherapy. RxFiles drug comparison charts. 10th ed. Saskatoon, SK: Saskatoon Health Region; 2014. p. 156. [cited 29 Mar 2016]. Available from: www.RxFiles.ca.

Drug and Availability	Common Adverse Events, Contraindications, Monitoring	Advantages, Disadvantages, Comments	Dosing Schedule	Cost for ~ 12 weeks ^a
NRT: General Comments	Adverse events: arthralgias/back pain ≥ 5%; gastrointestinal: flatulence 4%, nausea, diarrhea, taste change, etc.; acne 3%; dysmenorrhea 3% Contraindications: caution in angina/CAD or recent MI (however, some would suggest safer than smoking); hypersensitivity to components; eczema Monitoring: individualize dose, increase if withdrawal, decrease if adverse effects; if no response in 4 weeks, stop, reassess, reinstate?	Comments <ul style="list-style-type: none"> • Maintains stimulation of nicotine receptors to minimize or eliminate craving and withdrawal symptoms. • Non-prescription • No evidence of a difference between formulations; choose specific formulation based on adverse effects, contraindications, and patient preferences • Some real-life studies have found long-term results are no better than placebo; effectiveness may depend on co-interventions and/or highly motivated patients 	<ul style="list-style-type: none"> • May use ≤ 6 months and start ≥ 2 weeks before quit attempt 	
NRT Patch: <i>Nicoderm</i> 7, 14, 21 mg/day patch <i>Habitrol</i> 7, 14, 21 mg/day patch <i>Nicorette</i> 5, 10, 15 mg/16 hours patch Generics	Adverse events: skin irritations 32%; headache ~ 20%; insomnia and nightmares (if worn at night) Contraindication: remove prior to MRI (contains aluminum); NOT contraindicated in CVD Monitoring: in pregnancy, if possible, apply patch for only 16 hours/day to decrease embryo-fetal exposure; if insomnia/disturbing dreams, remove patch at night	Advantages <ul style="list-style-type: none"> • Convenient once-daily dosing, slow constant release rate, more tolerable adverse events • Fewer CVD events, option (at least 2 weeks) after MI Disadvantages <ul style="list-style-type: none"> • No spikes in concentrations to correspond with cravings Comments <ul style="list-style-type: none"> • Smoking with patch may increase nicotine risks, but is not contraindicated • Starting 1 to 4 weeks before quit date may increase success rate • Tapering not always necessary • Two patches may be required in heavy smokers • Apply new patch to clean, dry, non-hairy area every day 	<ul style="list-style-type: none"> • Patient smoking < 10 cigs/day, weight < 45 kg, or heart disease: <ul style="list-style-type: none"> ◦ 14 mg daily for 6 weeks, ◦ then 7 mg daily for 2 weeks • Patient smoking > 10 cigs/day: <ul style="list-style-type: none"> ◦ 21 mg daily for 6 weeks, ◦ then 14 mg daily for 2 weeks, ◦ then 7 mg daily for 2 weeks • Different manufacturers may give slightly different instructions 	\$360
NRT Gum: Sugar-Free, Flavours <i>Nicorette</i> 2 mg, 4 mg gum <i>Thrive</i> 2 mg, 4 mg gum Generics	Adverse events: cough, throat irritation – usually mild Contraindications: dental problems, temporomandibular joint syndrome Monitoring: coffee and acidic beverages (e.g., juice, pop) impair absorption; space by ≥ 15 minutes	Advantages <ul style="list-style-type: none"> • Flexible dosing schedule • Quick delivery via buccal mucosa • In pregnancy, some prefer acute source (gum or inhaler) over constant source (patch) Disadvantages <ul style="list-style-type: none"> • Unpleasant taste • Not advised for high-risk cardiac patients • Risk of dependence Comments <ul style="list-style-type: none"> • "Park and chew" – chew gum a few times, then hold in side of mouth for 1 minute; repeat for about 30 minutes 	Patient smoking < 15 cigarettes/day: 2 mg Patient smoking > 15 cigarettes/day, or smoking within 30 minutes of waking: 4 mg ~ 1 piece/hour, as needed; maximum 20 pieces/day; average 10 to 16 pieces/day Individual taper	\$340
NRT Inhaler: <i>Nicorette</i> 4 mg (per 10 mg cartridge) <i>QuickMist Mouth Spray</i>	Adverse events: throat irritation 66%, cough 32%, rhinitis 23%, dyspepsia 18%	Advantages <ul style="list-style-type: none"> • Flexible dosing schedule • Quick delivery of high dose convenient for severe cravings • Mimics habitual hand-to-mouth motion Disadvantages <ul style="list-style-type: none"> • Not recommended for high-risk cardiac patients Comments <ul style="list-style-type: none"> • 10 puffs = 1 puff from cigarette • Maximum absorption with ~ 20 minutes of short, continuous, frequent puffing • Once punctured, cartridge viable for 24 hours 	<ul style="list-style-type: none"> • 6 to 16 cartridges/day for 12 weeks, then individualized taper over the course of 6 to 12 weeks 	\$440
NRT Lozenge: Sugar-Free, Flavours <i>Nicorette</i> 2, 4 mg <i>Thrive</i> 1, 2 mg Generics	Adverse events: soreness in gums, teeth, throat; hiccups; heartburn, indigestion	Advantages <ul style="list-style-type: none"> • Convenient, inconspicuous, good with dentures • Flexible dosing schedule Comments <ul style="list-style-type: none"> • "Park and suck" – suck until strong taste, then hold in side of mouth for 1 min., repeat; lozenge lasts ~ 30 min. • Lozenge delivers more nicotine per piece as compared with gum: 2 mg lozenge ≈ 4 mg gum 	<ul style="list-style-type: none"> • Patient with first craving > 30 min. after awakening: 2 mg • Patient with first craving > 30 min. after awakening: 4 mg • Use 1 lozenge every 1 to 2 hours for 6 weeks, then every 2 to 4 hours for 3 weeks, then every 4 to 8 hours for 3 weeks • Maximum 15 x 2 mg lozenges per day 	\$340
Bupropion: <i>Zyban</i> 150 mg tablet <i>Wellbutrin</i> (not indicated for smoking cessation)	Adverse events: insomnia, agitation, tremor, decreased appetite, gastrointestinal upset, dry mouth, seizure (1/1,000 at 300 mg/day), aggression/suicide? (n = 14) Contraindications: personal or family history of seizures; increased risk for seizures (e.g., eating disorders); head trauma; patients on MAO inhibitors within 14 days; caution in breastfeeding Monitoring: CYP 450 2B6 and 2D6 drug interactions (e.g., carbamazepine, phenytoin, and rifampin decrease levels of bupropion; cimetidine increases levels of bupropion)	Advantages <ul style="list-style-type: none"> • Option for patients with concomitant depression • May delay weight gain and cravings post-smoking cessation • NOT contraindicated in patients with CVD or on SSRIs Disadvantages <ul style="list-style-type: none"> • Slower onset (1 to 2 weeks) Comments <ul style="list-style-type: none"> • An atypical antidepressant that inhibits the reuptake of norepinephrine and dopamine • Prescription only • May combine bupropion with NRT in patients with severe cravings or withdrawal symptoms 	<ul style="list-style-type: none"> • 150 mg daily for 3 days, then 150 mg SR twice daily for 7 to 12 weeks • Begin ≥ 1 week before cessation of smoking • Take second dose in the early evening to minimize insomnia, but allow at least 8 hours between doses • Reduce dose in renal dysfunction 	\$215
Varenicline: <i>Champix</i> 0.5, 1 mg tablet (two-week starter pack available)	Adverse events: nausea 30%; sleep/dream disturbance 18%; taste disturbance; aggression? Monitoring: increased nausea with NRT, increased intoxication with alcohol Contraindications: possibly end-stage renal disease, epilepsy, or suicidal; caution in pregnancy and breastfeeding	Comments <ul style="list-style-type: none"> • A nicotine receptor partial agonist with partial antagonist properties, varenicline reduces cravings for nicotine and also reduces the pleasurable effects of using tobacco • Prescription only • At 12 weeks, weight gain was more than with bupropion but less than with placebo 	<ul style="list-style-type: none"> • 0.5 mg daily for 3 days, then 0.5 mg twice daily for 4 to 7 days, then may increase to 1 mg twice daily • Set a quit date ~ 1 to 12 weeks after starting • Reduce dose in renal dysfunction 	\$340
Smoking/Tobacco: All forms	Quit-smoking advice from a clinician, even brief, can improve cessation by 30%. Some smokers attempt 10 times before quitting! Withdrawal symptoms better after 1 to 3 weeks.		<ul style="list-style-type: none"> • 1 to 3 mg nicotine per cigarette; 1 pack = ~ 25 cigarettes 	Cost savings for 1 pack/ day smokers = \$1,100

CAD = coronary artery disease; CVD = cardiovascular disease; MAO = monoamine oxidase; MI = myocardial infarction; min. = minute; MRI = magnetic resonance imaging; NRT = nicotine replacement therapy; SSRI = selective serotonin reuptake inhibitor.

^a All drug costs are for a 12-week supply and include mark-up and dispensing fees for British Columbia in 2016. Smoking cost is courtesy of RxFiles.

Key Messages for Health Professionals

Nicotine replacement therapy (NRT), bupropion, and varenicline are all effective aids for quitting tobacco smoking, so patient preference can drive the choice of drug therapy. NRT and bupropion may double the chance of quitting, and varenicline may increase the chance of quitting two- to three-fold.¹

Drug therapy is effective for smokers with heart disease or chronic obstructive pulmonary disease,¹ but there is uncertainty regarding the safest treatment option for people with cardiovascular disease.³

In pregnant women, NRT is as effective as cognitive behavioural therapy and does not seem to increase perinatal adverse outcomes. Guidelines generally recommend behavioural therapy first, with drug therapies as second-line options.⁴

Evidence is limited for other groups. For example, small studies of adolescents, people using smokeless tobacco, or recent quitters attempting to prevent relapse showed a lack of effect with NRT.²

There is limited evidence for NRT combination therapy (patch plus gum), and the high-dose NRT patch (as compared with the standard-dose NRT patch).⁵

NRT appears effective in the reduction of smoking for those who do not want to quit.⁵

References

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