ONTARIO PHARMACISTS ASSOCIATION
Drug Information & Resource Centre

MANITOBA SOCIETY OF PHARMACISTS

Therapeutic Options

FOCUS ON SMOKING CESSATION

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Tobacco addiction is the single most preventable cause of morbidity and mortality in Canada. In 2013, 19.3% of the population smoke tobacco[1] and every year, approximately 37,000 people die[2] from tobacco-related diseases. Every 11 minutes, a Canadian dies from tobacco use. Every 10 minutes, two Canadian teenagers start smoking cigarettes; one of them will lose their life because of it.

Smoking tobacco is known to cause up to 90% of all lung cancers and COPD (chronic obstructive pulmonary disease) and is a risk factor of coronary heart disease, stroke, peripheral vascular disease, diabetes, reproductive and fetal developmental diseases, and countless other conditions.[3] Lung cancer is the leading cause of cancer death in Canada, more than breast cancer, colorectal cancer and prostate cancer combined.[4]

Smoking cessation, even after a short period of time, is known to produce significant health benefits. Within 12 weeks of smoking cessation, improvements in oxygen transportation, smell, taste, breathing, energy, and immune responses are observed. Within 12 months, the risk of coronary heart disease will return to half that of a current smoker and is reduced to that of a non-smoker by 15 years.[3]

Smoking cessation treatments have greater cost effectiveness and clinical efficacy in comparison to other preventative health measures such as treatment of hypertension and hypercholesterolemia. Research has shown that the cost per life year saved by smoking cessation interventions makes it the most cost-effective health care intervention.[5]

For these reasons, assisting patients with smoking cessation is one of the most impactful and important interventions a pharmacist will perform.

This article is intended to provide an overview of current pharmacotherapies for smoking cessation in Canada which is based on the **CAMH CAN-ADAPTT Canadian Smoking Cessation Clinical Practice Guideline 2012** (Canadian Smoking Cessation Canadian Action Network for the Advancement, Dissemination and Adoption of Practice-informed Tobacco Treatment, Centre for Addiction and Mental Health)[6] as well as the **Ottawa Model Of Smoking Cessation (OMSC)**.[7]

CURRENT THERAPEUTIC OPTIONS FOR SMOKING CESSATION

The overall approach to conducting interventions for smoking cessation in the primary care setting in the past has been guided by the 5 A's – Ask, Advise, Assess, Assist and Arrange. The Ottawa Model of Smoking Cessation updates this version to the **3 A's – Ask, Advise and Act**.

Ask (Screening)
- All patients should have their tobacco status (smoker, ex-smoker, never smoker) documented on a regular basis into the patient profile
- This simple action significantly increases rates of intervention by pharmacists as well as the cessation rate by smokers[8]

Advise
- The pharmacist should provide clear and non-judgemental advice for patients to quit smoking

Act
- Minimal interventions, of 1-3 minutes, are effective and should be offered to every tobacco user
- There is a strong dose-response relationship between the session length and successful treatment, so intensive interventions should be used whenever possible
- Person to person treatment delivered for four or more sessions is especially effective in inducing prolonged abstinence
- Counselling by a variety or combination of delivery formats (self-help, individual, group, helpline, web-based based) is effective
- Two types of counselling and behavioural therapies yield significantly higher abstinence rates and should be included in smoking cessation treatment: 1) providing practical counselling (problem solving/ skill training) and 2) providing support and encouragement as a part of treatment
- For patients not willing to make a quit attempt, motivational interviewing techniques by the pharmacist are effective in increasing the chance of a future quit attempt.

It is important to remember that most patients will relapse multiple times before achieving successful long-term abstinence. Pharmacists should guide patients from pre-contemplation, contemplation, preparation, action, and finally to maintenance over a period of time in order to guarantee a successful quit attempt.[9]

FIRST LINE PHARMACOTHERAPY

Combining counselling and smoking cessation medication is more effective than either alone. Therefore both should be provided to patients trying to stop smoking where feasible.

Current first-line pharmacotherapies include nicotine replacement therapy (NRT), bupropion hydrochloride, and varenicline tartrate. Health Canada recommends thorough consideration should be given to NRT alone prior to prescribing varenicline or bupropion.[10]

The choice of any pharmacotherapy for smoking cessation should be guided by efficacy, contraindications, precautions and drug interactions. Consideration should be given to patient product experience, preference, convenience, availability and cost.

The **CAN-ADAPTT Algorithm for Tailoring Pharmacotherapy for Tobacco Addiction** (Nov 2013) is a useful tool for guiding pharmacists in tailoring pharmacotherapy for patients in any setting.

A PDF version of this tool is available at: https://www.nicotinedependenceclinic.com/English/teach/resources/Visual%20Aids/Tobacco%20Algorithm%20updated%20Nov%202013.pdf

The **Ottawa Model of Smoking Cessation (OMSC) Consult Form** is another useful tool for assisting pharmacists with evidence-based dosing and counselling for first-line therapies. (See Figure 1.)

A PDF version of this form is available at: https://www.opatoday.com/professional/resources/for-pharmacists/tools-and-forms/expanded-scope under the Smoking Cessation section.

Nicotine replacement therapy (NRT) products are designed to control cravings by replacing nicotine through various delivery systems. Available in Canada are the long-acting transdermal patches as well as the short-acting gum, lozenge, inhaler and mist.

No available NRT products deliver nicotine as quickly as a cigarette, which can deliver 1 mg to 2 mg of nicotine per cigarette. The typical pack-per-day smoker absorbs 20 to 40 mg of nicotine per day.[11] Some patients fail on NRT because the product monograph does not recommend doses relevant to the level of nicotine required to prevent withdrawal.[12] Certain patients may be fast metabolizers of nicotine and therefore require higher doses. Dosage should be titrated to relieve cravings and withdrawal while minimizing the adverse effects of nicotine toxicity (dizziness, nausea, jitteriness). The estimated lower limit of a lethal dose of nicotine has been reported to range between 500 and 1000 mg.[13]

Varenicline tartrate (Champix) is a selective partial agonist that competes with nicotine for the α4β2 nicotinic acetylcholine receptors. By blocking nicotine from binding to the α4β2 receptors, varenicline can prevent nicotine from stimulating the mesolimbic dopamine system (i.e. reinforcement and reward pathway), while causing the partial release of mesolimbic dopamine at a significantly lowered level. This mechanism reduces a patient's urge to smoke. CAN_ADAPTT clinical practice guidelines report that varenicline is the most effective form of single pharmacotherapy for smoking cessation based on available evidence. The most common adverse event is nausea, which is reported to be mild, self-limiting, and resolving over time.[14]

Figure 1

UNIVERSITY OF OTTAWA HEART INSTITUTE / INSTITUT DE CARDIOLOGIE DE L'UNIVERSITÉ D'OTTAWA

OTTAWA MODEL FOR SMOKING CESSATION IN PRIMARY CARE / MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC EN SOINS PRIMAIRES

Quit Plan Consult Form

Patient ID:
Last Name:
First Name:
Address:
City: Postal Code:
Tel: Date of Birth: dd/mm/yy
Email:
MD/NP Name:

Preferred language: ☐ English ☐ French ☐ Other (specify):_____

SMOKING CESSATION COUNSELLOR

PHYSICIAN CONSULT [K039, Q042A]

ASSIST — Provide patient with copy of ***Your Quit Smoking Plan*** — ☐ Yes ☐ No

ASSIST Set Quit Date — Set **Quit Date** with patient: **QUIT DATE:** _____ (dd/mm/yy) — ☐ Yes ☐ No

ASSIST Identify Contraindications/ Precautions

Bupropion (Zyban) Contraindications
- ☐ Pregnant, breast feeding or planning pregnancy
- ☐ History of seizure disorder or head trauma
- ☐ Presently taking Bupropion/ Zyban/ Wellbutrin
- ☐ Previous reaction to Bupropion/ Zyban/ Wellbutrin
- ☐ Pre-existing or current eating disorder
- ☐ Excessive use of alcohol/sedatives present or past
- ☐ Taking anti-depressants, antipsychotics, corticosteroids, MAO inhibitors, theophyline, cocaine or diet pills
- ☐ Taking a quinolone antibiotic (e.g. ciprofloxacin)
- ☐ Severe hepatic impairment

Precautions
- ☐ Use of oral hypoglycemic products or insulin
- ☐ Central nervous system tumour

Varenicline (Champix) Contraindications
- ☐ Pregnant, breast feeding or planning pregnancy
- ☐ Under the age of 18 years
- ☐ History of renal failure and is taking Cimetidine
- ☐ Previous drug reaction to Varenicline
- ☐ Has history of renal failure (check with physician)
- ☐ History of nausea and vomiting in past two months (check with physician)

Precautions
- ☐ Using NRT in addition to Varenicline
- ☐ Operates heavy machinery (avoid until reaction to medication is known)

NRT
- ☐ Dentures/TMJ/Partial/Crown (avoid NRT gum)
- ☐ Allergy to adhesive (consider clear patch)

Mental Health History — Past or current history of: ☐ Anxiety ☐ Depression ☐ Substance use/alcohol abuse ☐ Other (specify):_____ Currently treated: ☐ Yes ☐ No

ASSIST Select Pharmacotherapy

☐ NRT	<10 cigs/day	10-19 cigs/day	20-29 cigs/day	30-39 cigs/day	40+ cigs/day
PATCH	☐ 7 mg patch	☐ 14 mg patch	☐ 21 mg patch	☐ 28 mg patch (21 mg + 7 mg)	☐ 42 mg patch (21 mg x 2)
If time to first cig is <30 mins of waking, consider higher dose NRT	☐ 14 mg	☐ 21 mg	☐ 28 mg (21 mg + 7 mg)	☐ 35 mg patch (21 mg + 14 mg)	☐ _____
SHORT ACTING	☐ Inhaler ☐ 2 mg gum ☐ 2 mg lozenge ☐ Mouth Spray	☐ Inhaler ☐ 2 mg gum ☐ 2 mg lozenge ☐ Mouth Spray	☐ Inhaler ☐ 4 mg gum ☐ 4 mg lozenge ☐ Mouth Spray	☐ Inhaler ☐ 4 mg gum ☐ 4 mg lozenge ☐ Mouth Spray	☐ Inhaler ☐ 4 mg gum ☐ 4 mg lozenge ☐ Mouth Spray

☐ **Varenicline** - Days 1-3: 0.5 mg once/day; Days 4-7: 0.5 mg BID; Day 8-12 wks 0.5-1mg BID (titrate appropriately) *Start 8 to 35 days before the quit date
☐ **Bupropion** - Days 1-3: 150 mg daily (in the morning); Days 4-12 weeks: 150 mg BID.*Start 8 days before the quit date.
☐ **No medication prescribed**

ARRANGE Follow-up — The Smoking Cessation Automated Follow-up System is monitored jointly by UOHI and Smokers' Helpline (SHL) to provide assistance to smokers making a quit attempt. All information is kept confidential and only used for administering and evaluating the follow-up program.

Phone number: ☐ Same as above or alternate: ( )_____
Preferred time of call: ☐ 7-9am ☐ 9am-12pm ☐ 1-5pm ☐ 6-9pm
Preferred Method of Follow-up: ☐ Email: _____ ☐ Telephone ☐ FHT Appointment ☐ No Follow-up

Consent to be contacted by UOHI/SHL for Follow-up ☐ Yes ☐ No

REVIEW
- ☐ Reviewed potential for changes in mood related to quitting smoking
- ☐ Reviewed medication information with patient
- ☐ Advised patient on how to prepare for his/her quit date
- ☐ Discussed smoking routines and triggers and identified strategies for managing cravings
- ☐ Reminded patient that he/she will need to cut back on caffeine by half after quit date
- ☐ Reviewed automated Smoker's Follow-up System instructions with patient

Counsellor Name: _____ Date _____

Primary Care Consult – IVR

Bupropion hydrochloride (Zyban SR) is a norepinephrine and dopamine re-uptake inhibitor that decreases nicotine cravings and symptoms of withdrawal while interacting with neural pathways underlying nicotine addiction. It can also be used as an antidepressant and is thought to reduce the depressive symptoms of nicotine withdrawal. Evidence from clinical trials report that bupropion aids long-term smoking abstinence when compared to placebo and nicotine replacement therapy products. The most common adverse events include insomnia, dry mouth, and nausea.[14]

Combinations

- NRT long-acting patches combined with short-acting NRT have been shown to improve efficacy over single use NRT.[11]
- The combination of bupropion and NRT has been shown to be effective.[14]
- Varenicline and bupropion in combination may be effective.[15]
- Although varenicline and NRT combination is not recommended in the product monograph (may increase the risk of nicotine adverse effects), there is some evidence it is effective in patients who still have cravings.[16]

Length of Therapy

Although 12 weeks of pharmacotherapy has been standard in the past, smoking cessation medications which are given for up to 26 weeks have shown to improve long term abstinence.[11]

Tobacco Smoke Interactions

Tobacco smoke interacts with medications via the induction of various metabolic enzymes. Therefore, when patients are quitting, dosing of medications may need to be adjusted. A good resource for pharmacists is the Drug Interactions with Smoking chart available online at http://www.ashp.org/DocLibrary/Policy/Tobacco/Drug-Interactions.aspx.

2ND LINE PHARMACOTHERAPY

Second-line medications are used infrequently. Their use should be considered on a case-by-case basis when first-line medications, either alone or in combination, have been unsuccessful or are contraindicated.

While clonidine and nortriptyline are considered 2nd line treatments in US Guidelines,[17] the CAMH CANADAPTT guidelines state there is insufficient evidence to make a recommendation for either.

ALTERNATIVE/UNPROVEN INTERVENTIONS

To date, alternative therapies such as acupuncture, hypnotherapy, and laser therapy have for the most part, been unsuccessful for smoking cessation.[18]

Electronic nicotine delivery systems (ENDS) or E-cigarettes or E-cigs were developed in Beijing, China by a pharmacist and brought to the North American market in 2006. These electronic devices use a battery-powered heating element, across which a solution of nicotine, propylene glycol and glycerin is drawn. This causes the humectant to vaporize and subsequently be inhaled via a small tube as a mist.

At present, few studies exist to support the argument for or against ENDS with confidence. On one side, there is potential for harm reduction, and the potential as a smoking cessation aid. On the other side, there are concerns about unregulated manufacturing, dual use and gateway access for youth to smoke cigarettes especially when made available in a variety of flavours.[19]

SPECIFIC POPULATIONS

YOUTH (CHILDREN & ADOLESCENTS)

Tobacco use typically begins in childhood or early adolescence with only 10% of new smokers initiating the habit after the age of 18 years.

Summary statements

1. Health care providers who work with youth (children and adolescents) should obtain information about tobacco use (cigarettes, cigarillos, waterpipe, etc.) on a regular basis.
2. Health care providers are encouraged to provide counselling that supports abstinence from tobacco and/or cessation to youth (children and adolescents).
3. Health care providers in pediatric health care settings should counsel parents/guardians about the potential harmful effects of second-hand smoke on the health of their children.

HOSPITAL-BASED POPULATIONS

Smoking is known to have a significant negative impact on risks associated with hospitalization; quitting smoking prior to admission has been shown to be beneficial for postoperative complication rates.

Knowledge of impending hospitalization provides an ideal window of opportunity to deliver pre-emptive smoking cessation services and supports for patients. Moreover, patients admitted for a smoking-related reason may be more receptive to smoking cessation interventions.

A systematic approach to identify, treat and follow up with all admitted smokers has been demonstrated to be an effective model and should be considered where possible. One example is the Ottawa Model of Smoking Cessation (OMSC) which has been implemented in many hospitals across Canada.

Summary statements

1. All patients should be made aware of hospital smoke-free policies.
2. All elective patients who smoke should be directed to resources to assist them to quit smoking prior to hospital admission or surgery, where possible.
3. All hospitals should have systems in place to:
   a) identify all smokers;
   b) manage nicotine withdrawal during hospitalization;
   c) promote attempts toward long-term cessation and;
   d) provide patients with follow-up support post-hospitalization.
4. Pharmacotherapy should be considered:
   a) to assist patients to manage nicotine withdrawal in hospital;
   b) for use in-hospital and post-hospitalization to promote long term cessation.

MENTAL ILLNESS AND/ OR ADDICTIONS

People with mental illness are two to four times more likely to smoke, are heavier smokers and have lower quit rates compared to smokers from the general population.

Smoking rates, differing by diagnoses, vary from 40% to 90%, compared to 17% in the general Canadian population.

Summary statements

1. Health care providers should screen persons with mental illness and/or addictions for tobacco use.
2. Health care providers should offer counselling and pharmacotherapy treatment to persons who smoke

and have a mental illness and/or addiction to other substances.
3. While reducing or quitting smoking, health care providers should monitor the patient's mental health status. Medication dosage should be monitored and adjusted as necessary.

Points to Consider
- No smoking cessation pharmacotherapy has been contraindicated in persons with mental illness unless medically contraindicated.
- Pharmacotherapy and counselling approaches yield greater success rates than providing either a pharmacotherapy or counselling approach alone.
- There are advisories from Health Canada regarding the need to monitor for neuropsychiatric side effects including suicidal ideation, self-injurious behavior, and severe depression when quitting smoking, especially with the use of bupropion or varenicline.
- People with mental health issues who stop smoking while taking medications for their illness should be monitored closely to determine if dosage reduction of their medications is necessary.

PREGNANT AND BREAST-FEEDING WOMEN

Smoking during pregnancy can have devastating health consequences on the mother and the unborn child, including growth restriction, preterm delivery, and stillbirth.

Summary statements
1. Smoking cessation should be encouraged for all pregnant, breastfeeding and postpartum women.
2. During pregnancy and breastfeeding, counselling is recommended as first line treatment for smoking cessation.
3. If counselling is found ineffective, intermittent use of nicotine replacement therapies (such as lozenges, gums) are preferred over continuous use of a nicotine replacement patch.
4. Partners, friends and family members should also be offered smoking cessation interventions.
5. A smoke-free home environment should be encouraged for pregnant and breastfeeding women to avoid exposure to second-hand smoke.

Points to Consider
- Depression during pregnancy is common and the use of bupropion may be appropriate to treat both smoking and depression. Although, there is limited evidence on the effectiveness of bupropion for smoking cessation during pregnancy, there is also no evidence of harm.[20] Therefore, it may be considered for use as an alternative to NRT for a subpopulation of pregnant smokers.

ABORIGINAL POPULATIONS

Tobacco has played an important part in traditional and spiritual practices in many Aboriginal communities. However, the misuse/abuse of tobacco is of growing concern not only to the general Canadian population, but also to First Nations. Studies have demonstrated that smoking rates amongst First Nations people are more than **double** that of the general Canadian population.

Generally those strategies which are effective for the general Canadian population should be considered effective for Aboriginal people.

Summary statements
1. Healthcare providers should update the Tobacco misuse status of Aboriginal people on a regular basis.
2. All healthcare providers should offer assistance to Aboriginal people who misuse tobacco with specific emphasis on culturally appropriate methods.
3. All healthcare providers should be familiar with available cessation support services for Aboriginal people.
4. All individuals working with Aboriginal people should seek appropriate training in providing evidence-based smoking cessation support.

CONCLUSION

Pharmacists are the most accessible healthcare providers with pharmacological expertise. They are in a unique position to offer patients a consistent level of care by providing evidenced-based smoking cessation interventions which has the ability to make the most significant impact on improving a patient's health.

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