

Improving Smoking Cessation Rates In Long Term Care

In Ontario, long-term care residences forbid cigarette smoking but offer help for newly admitted residents who do. Nevertheless, healthcare professionals know that changing a decades-long addiction can be challenging. On one hand, while there exist several therapeutic options to help people quit, treatment failure is common. The good news is there are strategies to help improve success rates.



NICOTINE REPLACEMENT THERAPY (NRT)

NRT is generally the first line choice for smoking cessation, so a care provider should first check whether a resident has made an unsuccessful quit attempt prior to admission. One major reason for NRT treatment failure is that many patients are under dosed. Typically we assume that one cigarette is equivalent to 1 mg of nicotine [1]. This would mean that a two-pack per day smoker (or 50 cigarettes per day) would need approximately 50 mg of nicotine to provide a similar dose. It is therefore recommended when initiating NRT that the patient's nicotine patch dose "match" the preadmission dose of nicotine from cigarettes. This is done to reduce cravings and reduce the usage of bolus NRT products, such as the lozenge, gum, spray or inhalers.

Examples of starting patch strengths for NRT

based on the number of cigarettes smoked per day. Please note that patches are available in the following strengths: 21 mg/day, 14 mg/day, and 7 mg/day. This means we can dose in increments of 7 mg. For example, a dose of 49 mg/day can be achieved with 2 patches of 21 mg and 1 patch of 7 mg. The NRT patch manufacturers do not recommend cutting patches in half because it causes the nicotine to evaporate rapidly, making the 2 halves useless.

This table is a rough guideline for NRT dosage prescribing. NRT should be individualized for each patient as two patients who smoke the same number of cigarettes may have different nicotine requirements per day to prevent cravings. The table is also meant to highlight that it is usually better to give a little extra nicotine per day than to under dose the patient and have them experience withdrawal.

Cigarettes Smoked per day	NRT Total Strength	Patches used to make dose
Less than 10	7 mg	One 7 mg patch
10 to 17	14 mg	One 14 mg patch
18 to 24	21 mg	One 21 mg patch
25 to 31	28 mg	One 7 and 21 mg patch
32 to 38	35 mg	One 14 and 21 mg patch
39 to 45	42 mg	Two 21 mg patches
45 to 52	49 mg	Two 21 mg patches and one 7 mg patch

- If the patient's first cigarette of the day is less than 30 minutes after waking, this indicates greater dependency thus higher doses of NRT should be considered [2].
- If the patient is smoking less than 20 cigarettes per day the 2 mg gum/lozenge/spray/inhaler should be used for bolus NRT [2].
- If the patient is smoking 20 or more cigarettes per day, the 4 mg gum/lozenge/spray/inhaler should be used for bolus NRT [2].

For smokers who smoke more than 15 cigarettes per day, the typical steps to quitting that is advertised by NRT manufacturers is 3 steps of NRT patches over 6 weeks: starting at 21 mg for 4 weeks, then reducing to 14 mg for 2 weeks, then reducing to 7 mg for 2 weeks then discontinue. However, the tapering or dosage reduction of NRT does not need to occur this rapidly. For most patients this would be a very rapid reduction and may lead to increased cravings and treatment failure. NRT can be tapered much slower depending on how the patient is responding. NRT may even last up to six to 12 months in some patients. There are many alternative regimens to the three-step program commonly advertised. For example, the 15 cigarettes per day patient could be tapered as follows: start at 21 mg for six weeks, then reduce to 14 mg for six weeks, then reduce to 7 mg for six weeks then discontinue.

NRT can be tapered much slower depending on how the patient is responding.

Nicotine is a stimulant similar to caffeine. This means the symptoms of nicotine overdose are similar to having too much caffeine: headache, jittery, nausea and insomnia. If a new NRT patient is reporting these symptoms, try reducing their patch strength by 7 mg and reassessing. However, if the patient is reporting cravings and is frequently using bolus NRT (e.g. gum/lozenge/spray/inhaler) try to increase the patch strength by an amount comparable to what they are using in bolus NRT.

For example:

- If a patient is using a 21 mg patch and is using 3 nicotine gum pieces of 4 mg each per day and is experiencing cravings, try increasing their patch strength by 14 mg to 35 mg/day to help reduce gum usage and cravings.
- For patients who are experiencing insomnia while on the patch, remove the patch before bedtime (therefore, they wear their patches for 14-16 hours per day).
- For highly addicted individuals, it is usually wise to use the patch for the full day (24 hours).

Symptoms of nicotine withdrawal and overdose ^[1]. This table lists common symptoms that patient's may experience when they are in nicotine withdrawal or nicotine overdose. The immediate onset symptoms of nicotine withdrawal usually occur within a few hours of quitting smoking and peak after 1-4 days. They can last up to 6 months. The later onset symptoms are usually milder and can last 6 months or longer.

Nicotine Withdrawal Symptoms		Nicotine Overdose Symptoms
<p><i>Immediate Onset:</i></p> <ul style="list-style-type: none"> ▪ Cravings to smoke ▪ Difficulty concentrating ▪ Restlessness ▪ Frustration ▪ Anger 	<p><i>Later Onset:</i></p> <ul style="list-style-type: none"> ▪ Nausea ▪ Diarrhea/constipation ▪ Fatigue ▪ Sleep disturbances ▪ Headaches ▪ Shakiness ▪ Dizziness 	<ul style="list-style-type: none"> ▪ Nausea/vomiting ▪ Sweating ▪ Confusion ▪ Weakness ▪ Racing heart ▪ Light-headedness ▪ Vertigo ▪ Tremors

BEYOND NRT: Zyban and Champix

If patients are not responding to NRT, Zyban (bupropion) or Champix (varenicline) are options that can be added. Champix does have higher quit rates than Zyban, but Champix can increase the side effects of NRT ^[3]. If the patient has been experiencing side effects of NRT, then Zyban would be the better choice. However, if the patient has tolerated NRT well, Champix does have higher quit rates and would be the more efficacious option. Both Zyban and Champix can potentially cause suicidal ideation so mood changes should be monitored.

Zyban and Champix can be used in combination without NRT ^[4, 5, 6]. This has been studied in several trials, but the results have been mixed. In patients who are not responding to NRT + Zyban or NRT + Champix, it is possible to use all three: Champix, Zyban and NRT. This has not been studied in trials, but some practitioners use it in very difficult cases when other combinations have been unsuccessful.

ELECTRONIC CIGARETTES OR E-CIGS

For patients who have a craving for cigarettes due to the hand-to-mouth habit of smoking, electronic cigarettes (e-cigs) are an option that may help satisfy that craving. Electronic cigarettes and cartridges are available through Medical Arts and do not contain any nicotine or tobacco. Moreover, Health Canada has not approved the sale of electronic cigarettes that contain nicotine. The main ingredients are vegetable glycerin, propylene glycol and food grade flavoring.

Electronic cigarettes create a water vapour people can inhale by heating the liquid in the electronic cigarette. It is a relatively new product, but non-nicotine electronic cigarettes appear to be safe for patients and are definitely safer than cigarettes ^[7]. Additionally, the product is available in a disposable or replaceable cartridge versions that provide as many puffs as one or two cigarette packs (25 to 50 cigarettes) would. The typical disposable electronic cigarette costs about \$10-15 each.

SMOKING AND MEDICATION METABOLISM

Cigarettes do alter the metabolism of some medications (primarily through CYP1A2). This means that some medications the patient is taking may have to be adjusted when they quit smoking. The table below shows the change that occurs from smoking and the suggested dosage adjustment (please note this table is not exhaustive. Check with the pharmacist if you are unsure if a medication is affected by smoking). Caffeine is also metabolized by CYP1A2 (clearance is increased by around 50% in smokers), and this means that when patients are quitting smoking they should reduce their caffeine intake by half. Reducing caffeine is important as the symptoms of caffeine toxicity can mimic the symptoms of nicotine withdrawal and nicotine overdose.

Selected Drug-Smoking Interactions ^[8]

Drug/Class	Interaction	Monitoring and Dosage Adjustment
<i>Certain Antipsychotics:</i> <ul style="list-style-type: none">Chlorpromazine (Thorazine)Clozapine (Clozaril)Fluvoxamine (Luvox)Haloperidol (Haldol)Olanzapine (Zyprexa)	Smoking can increase metabolism of these medications.	Monitor for medication side effects and reduce dosage if patient is experiencing side effects.
Propranolol (Inderal)	Smoking increases propranolol clearance.	Monitor blood pressure and heart rate and reduce dosage if needed.
Ropinirole (Requip)	Smoking decreases ropinirole plasma concentrations.	Monitor for side effects during smoking cessation. Dosage may need to be reduced.
Theophylline (Theo Dur)	Smoking increases theophylline metabolism.	Monitor theophylline levels as they may increase with smoking cessation and the patient's dosage may need to be decreased.
Warfarin	Effect of smoking on INR is not predictable.	Monitor INR closely when smoking cessation is initiated and adjust the dose accordingly.

References

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