

Tobacco Cessation Medications

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Epidemiology – According to the CDC, cigarette smoking remains the leading cause of disease, disability, and death in the United States. Many adult cigarette smokers want to quit smoking.

Nicotine replacement therapy (NRT) – Reduces withdrawal symptoms and the urge to smoke.

Short Acting NRT – Available over the counter, each with same efficacy, rapidly absorbed, and more effective if combined with long-acting nicotine replacement. Increase quit rates by 50-70% compared with placebo. None of the short-acting NRT reproduces the rapid and high levels of arterial nicotine achieved when cigarette smoke is inhaled. Coffee and carbonated drinks can reduce nicotine absorption. Nicotine may enhance the tachycardic effect of certain drugs like adenosine. Drugs that inhibit cytochromes P450 enzymes (cimetidine) could decrease the clearance of nicotine.

1. Nicotine gum – 2mg/hr for patients who smoke their first cigarette >30 mins after awakening and 4mg/hr for patients who smoke their first cigarette <30 mins after awakening. Use every 1-2 hours (max = 24 pieces/day). Try not to wait for cravings
2. Mini lozenge – Effective for patients who do not like the taste of gum. Allow lozenge to dissolve. 2mg/hr for patient who smoke their first cigarette > 30 mins after awakening. 4mg/hr for patients who smoke their first cigarette <30 mins after awakening. Use every 1-2 hours (max = 20 pieces/day). Try not to wait for cravings
3. Nasal spray – Can be used to each nostril every 1-2 hours (max = 80 sprays/day)
4. Nasal inhaler – Best effect observed with frequent, continuous puffing over 20 minute periods throughout the day

Long Acting NRT – Delivers nicotine in sustained manner throughout the day.

5. Nicotine patch - Wear for 12 hours at a time and remove at night given propensity for nightmares. If <10cig/day, start with 14mg/d. If >10 cig/day, start with 21mg/d

Non-nicotine Replacement Therapy

6. Varenicline (Chantix) – Superior to placebo, bupropion, and NRT. Partial agonist on 2 nicotinic acetylcholine receptors which mediate the release of dopamine. Reduces nicotine binding to nicotinic acetylcholine receptors that generate rewarding effects thus reducing the perceived pleasure generated by nicotine consumption
 - a. Start with 0.5mg po qd for 3 days, then 0.5mg po bid x3 days, then 1mg po qd for 3-6 months until end of treatment
 - b. Side effects include nausea, insomnia, abnormal dreams, nasopharyngitis, headache, and xerostomia. If side effects, 0.5mg po bid is appropriate dose.
 - c. Should be renally dosed for patient with kidney disease
 - d. Can be used in combination with NRT
 - e. Contraindicated with history of hypersensitivity reactions and skin reactions. Seizure disorder is NOT contraindicated but occurrence during therapy warrants stopping
 - f. Adverse effects such as aggressive behavior and amnesia have been reported with the combination of alcohol and varenicline. Limited data supporting safety in pregnancy
7. Bupropion (Wellbutrin) – Mechanism of action not well understood but may mimic nicotine effects on dopamine and noradrenaline receptors. Sustained release is an effective aid to help smokers quit with or without depression. Comparable to nicotine patch in efficacy but combination with NRT is more effective than either alone
 - a. Start with 150mg po qd x3d then dose should be increased to 150mg po bid for 7 to 12 weeks. Consider maintenance dose 300mg po qd based on individual patient risk/benefit
 - b. Side effect include insomnia, headache, dizziness, diaphoresis, weight loss (effective for patient who want to avoid post cessation weight gain), xerostomia, nausea and vomiting, and pharyngitis
 - c. Contraindicated in patients with seizure disorder and high-risk conditions that predispose to seizures including current use of benzodiazepines, barbiturates, or antiepileptic drugs and in patients taking MOA inhibitors. No increase in incidence of neuropsychiatric adverse effects compared with placebo in psychiatric and non-psychiatric patients

General Treatment Approach

For all patient encounters use the evidence based 5A's approach. ASK about lifetime use of cigarettes/nicotine. If using nicotine, ADVISE to quit smoking. ASSESS readiness to quit. ASSIST with behavioral support and pharmacologic therapy. ARRANGE follow up by referring to quit line.

- a. Patient ready to quit – Refer to quit line (1-800-QUIT-NOW) supplemented with Varenicline if affordable. If not affordable, use combination NRT such as nicotine patch plus nicotine gum or lozenge. Bupropion is somewhat less effective as described however is ideal for substance abuse users or if patient has depression
- b. Patient not ready to quit – Understand the patient's perspective of the risks and benefits of continuing to smoke. If hospitalized for a smoking related health problem, that can motivate some patients to act. Offer the option of initiating pharmacotherapy rather than waiting until they are ready to quit (varenicline is first line followed by NRT). Advise the patient to protect other people from exposure to secondhand smoke
- c. Patient reduced the amount of smoking but has not quit – Initiate or add a smoking cessation medication. For example, if only partial response to varenicline, add nicotine patch or bupropion or bupropion + NRT
- d. Patient quit but now has relapsed – Encourage patient to make another attempt to stop smoking. Recommend any previously successful therapy, intensify behavioral support, and consider enhancing therapy by initiating or combining with another smoking cessation medication as described
- e. Patient that is an e-cigarette user – Discuss the lack of long-term safety data. E-cigarettes can lead to conventional cigarette use. Counsel against dual use due to increased nicotine concentration and risk of dependence

Pearls:

- Ideally, continue pharmacotherapy for at least three months until patient feel confident that they will not relapse.
- Adverse effects associated with smoking are dose dependent however even <10 cigarettes per day associated with increased mortality and several smoking-related diseases.

References for further reading:

Choi et al. Cleveland Clinic Journal of Medicine. 01 Jul 2021, 88(7):393-404

American Cancer Society (ACS): Nicotine replacement therapy for quitting tobacco