

FDA APPROVED PHARMACOLOGIC TREATMENT FOR SMOKING CESSATION

All therapies should be given for a minimum of 12 weeks and up to 24 weeks. Most can safely be used longer in patients concerned about or at risk for relapse.

NICOTINE REPLACEMENT THERAPY (NRT)

	DOSING	MECHANISM OF ACTION	CLINICAL CONSIDERATIONS	SERIOUS ADVERSE EFFECTS	COMMON SIDE EFFECTS	PATIENT EDUCATION
LONG-ACTING NRT						
Nicotine Transdermal Patch Step 1 (21 mg) Step 2 (14 mg) Step 3 (7 mg)	One patch per day 21 mg for >20 cigarettes per day. 14 mg for <20 cigarettes per day. 7 mg for <10 cigarettes per day. After 6 weeks, option to continue original dose or taper.	$\alpha 4\beta 2$ Nicotinic acetylcholine receptor agonist.	Most effective when used in combination with short-acting NRT.	<ul style="list-style-type: none"> Monitor for \uparrowblood pressure, heart rate, arrhythmia. Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Skin irritation Insomnia Vivid dreams 	<ul style="list-style-type: none"> Apply new patch each morning to dry skin. Rotate application site. Remove patch at bedtime if insomnia or vivid dreams occur. If \uparrowblood pressure or heart rate, could indicate using too much.
SHORT-ACTING NRT						
Nicotine lozenge 2 & 4 mg	As needed, ~1-2 per hour 4 mg if first cigarette is ≤ 30 minutes of waking. 2 mg if first cigarette is >30 minutes of waking. Do not use more than 20 lozenges in a day.	$\alpha 4\beta 2$ Nicotinic acetylcholine receptor agonist.	<ul style="list-style-type: none"> Easier to use than gum for people with dentures. May be added to patch for breakthrough cravings. 2 mg lozenge = 1 mg active nicotine, 4 mg lozenge = 2 mg active nicotine. 	<ul style="list-style-type: none"> Monitor for \uparrowblood pressure, heart rate, arrhythmia. Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Mouth irritation Hiccups Heartburn Nausea 	<ul style="list-style-type: none"> Avoid food/drink right before and during use. Acidic food/drink will neutralize action & \downarrow absorption of nicotine. May cause heartburn or hiccups if swallowed.
Nicotine gum 2 & 4 mg	As needed, ~1-2 per hour 4 mg if first cigarette is ≤ 30 minutes of waking. 2 mg if first cigarette is >30 minutes of waking. Do not use more than 24 pieces in a day.	$\alpha 4\beta 2$ Nicotinic acetylcholine receptor agonist.	<ul style="list-style-type: none"> Not compatible with dentures in place. May be added to patch for breakthrough cravings. 2 mg gum = 1 mg active nicotine. 4 mg gum = 2 mg active nicotine. 	<ul style="list-style-type: none"> Monitor for \uparrowblood pressure, heart rate, arrhythmia. Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Mouth irritation Jaw soreness Hiccups Heartburn Nausea 	<ul style="list-style-type: none"> Avoid food/drink right before and during use. Acidic food/drink will neutralize action & \downarrow absorption of nicotine. Chew gum until peppery/tingling sensation, then park between gum and cheek for a minute; repeat 5 cycles then spit out. Not compatible with dentures in place; may take dentures out to use. May cause heartburn or hiccups if swallowed.
Nicotine nasal spray 10 mg/mL in 10-mL bottle, 0.5 mg per spray. 2 sprays = 1 cigarette	As needed, 1-2 sprays for craving Do not exceed 10 sprays per hour or 40 sprays per day.	$\alpha 4\beta 2$ Nicotinic acetylcholine receptor agonist.	<ul style="list-style-type: none"> Use 1 spray in each nostril for the equivalent of 1 cigarette. May be added to patch for breakthrough cravings. 	<ul style="list-style-type: none"> Monitor for \uparrowblood pressure, heart rate, arrhythmia. Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Mouth and nasal irritation Rhinitis Sneezing Coughing Tearing 	<ul style="list-style-type: none"> Burning sensation in nostril is normal. Quickest nicotine delivery of any short-acting systems.
Nicotine inhaler Each 4 mg cartridge = 4 cigarettes	Puff for 5 minutes or until craving has subsided Do not use more than 16 cartridges per day.	$\alpha 4\beta 2$ Nicotinic acetylcholine receptor agonist.	<ul style="list-style-type: none"> Mimics hand-to-mouth action of smoking. May be added to patch for breakthrough cravings. Convenient, smokeless, and odorless. 	<ul style="list-style-type: none"> Monitor for \uparrowblood pressure, heart rate, arrhythmia. Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Mouth and throat irritation Coughing if inhaled to deeply 	<ul style="list-style-type: none"> Do not inhale into lungs; instead puff like drinking through a straw. Change cartridge when nicotine taste disappears.

NON-NICOTINE THERAPY

	DOSING	MECHANISM OF ACTION	CLINICAL CONSIDERATIONS	SERIOUS ADVERSE EFFECTS	COMMON SIDE EFFECTS	PATIENT EDUCATION
Varenicline 0.5 & 1.0 mg	Days 1-3: 0.5 mg/day. Days 4-7: 0.5 mg twice daily. Days 8+: 1.0 mg twice daily.	Partial $\alpha 4\beta 2$ nicotinic acetylcholine receptor agonist (stimulates dopamine release) and antagonist.	<ul style="list-style-type: none"> Initiate 1-4 weeks before quit date. Can be effective in patients not ready to quit but willing to take varenicline. Cut back to 1 mg each day if too stimulated, activated, or anxious on 2 mg per day. 	<ul style="list-style-type: none"> Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Nausea Insomnia and vivid dreams Mood changes Agitation 	<ul style="list-style-type: none"> Take with food to avoid nausea. Nausea can occur if smoking too much while taking varenicline. May take second daily dose earlier in the evening to avoid disruption of sleep.
Bupropion Sustained Release 150 mg	Days 1-3: 150 mg/day. Days 4+: 150 mg twice daily.	Atypical antidepressant; inhibitor of norepinephrine and dopamine reuptake; may also serve as a mild $\alpha 4\beta 2$ nicotinic acetylcholine receptor antagonist.	<ul style="list-style-type: none"> Initiate 1-2 weeks before quit date. Avoid in patients who experience anorexic conditions (appetite suppressant). May be beneficial in patients who are concerned about weight gain. 	<ul style="list-style-type: none"> Risk of seizure is dose dependent; avoid if history of seizure disorder. Caution when combined with varenicline (both lower seizure threshold). Monitor for psychiatric changes. 	<ul style="list-style-type: none"> Nausea Suppresses appetite More activating than sedating 	<ul style="list-style-type: none"> May dose in morning only. May take second daily dose earlier in the evening to avoid disruption of sleep. Do not cut or crush tab.

COMBINATION THERAPIES HELP PEOPLE QUIT:

- Combination therapy with both non-nicotinic therapy and NRT is more effective than either treatment alone.
- Combining the patch with short-acting NRT is more effective than either treatment alone.
- Combining behavioral therapy with pharmacotherapy is the most effective treatment for smoking cessation.



References

1. IBM Micromedex. Bupropion. 2019; 2. IBM Micromedex. Nicotine. 2019; 3. IBM Micromedex. Varenicline. 2019.