

# Smoking Cessation Pharmacology at OHSU 2007: Nicotine Replacement Therapy (NRT) and Non-Nicotine Therapies

## Nicotine Replacement Therapies

General NRT recommendations: 1) Use sufficient amount to control withdrawal (overdosing is very unlikely; under-dosing is common; 2) Use one patch daily or flexible dosing NRT every few hours to maintain steady state; 3) Combination therapy may be necessary for heavier smokers to control withdrawal. NRT may be less effective for women than for men.

Therapy Efficacy	TRANSDERMAL PATCH (OR = 1.9)* Nicoderm CQ®, Generic	GUM (OR = 1.5)* Nicorette®, Generic	LOZENGE (OR = 1.95 (2 mg); 2.76 (4mg))* Commit®	INHALER (OR = 2.5)* Nicotrol® Inhaler	NASAL SPRAY (OR = 2.7)* Nicotrol® NS
Length of Treatment	8-10 weeks	Up to 12 weeks	12 weeks	3-6 months	3-6 months
Dosing	<ul style="list-style-type: none"> <li>• More than 10 cigs/day start on 21 mg. patch.</li> <li>• Less than 10 cigs/day, start on 14 mg. patch.</li> <li>• Apply once daily in am on hairless skin on upper body. Rotate sites.</li> <li>• Peak level in 2-8 hr.</li> <li>• 21 mg. x 4-6 wks. 14 mg. x 2 wks. (or 4-6 wks. if starting dose).</li> <li>• 7 mg. x 2 wks.</li> </ul>	<ul style="list-style-type: none"> <li>• 25 or more cigs/day = 4 mg.</li> <li>• Less than 25 cigs/day = 2 mg.</li> <li>• 1 every 1-2 hrs. x 6 wks.</li> <li>• 1 every 2-4 hrs. x 3wks.</li> <li>• 1 every 4-8 hrs. x 3 wks..</li> <li>• Peak level in 15-20 min.</li> <li>• Use "chew and park" technique; rotate to different sites in mouth.</li> <li>• Use enough to control symptoms, up to 24 per day.</li> </ul>	<ul style="list-style-type: none"> <li>• 1<sup>st</sup> cig less than 30 min after waking = 4 mg.</li> <li>• 1<sup>st</sup> cig more than 30 min after waking = 2mg.</li> <li>• 1 every 1-2 hrs. x 6 wks.</li> <li>• 1 every 2-4 hrs. x 3 wks.</li> <li>• 1 every 4-8 hrs. x 3 wks.</li> <li>• Peak level in 15-20 min.</li> <li>• Dissolve slowly, rotate sites in mouth, DO NOT CHEW.</li> <li>• Use enough to control symptoms, ≤ to 5 in 6 hrs. up to 20 per day.</li> </ul>	<ul style="list-style-type: none"> <li>• 6-16 cartridges per day/individualized dosing; start at least six per day initially. Use enough to control symptoms.</li> <li>• Peak level in 15-20 min.</li> <li>• Puff continuously for 20 minutes.</li> <li>• Inhale into back of throat or puff in short breaths; DO NOT inhale into lungs.</li> <li>• Can use part of cartridge and save rest for later (within 24 hours).</li> </ul>	<ul style="list-style-type: none"> <li>• Dose = one squirt to each nostril.</li> <li>• Peak level in 11-13 min.</li> <li>• Dose 1-2 times each hour as needed. Use enough to control symptoms.</li> <li>• Min dose = 8/day.</li> <li>• Max = 40/day.</li> <li>• Use correctly. DO NOT sniff, swallow, or inhale.</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>• Severe uncontrolled eczema or psoriasis.</li> <li>• Recent (≤ 2 wks) MI.</li> <li>• Serious underlying arrhythmias.</li> <li>• Serious or worsening angina.</li> <li>• Pregnancy (Category D).</li> <li>• Remove at night for sleep disturbances.</li> </ul>	<ul style="list-style-type: none"> <li>• Recent (≤ 2 wks) MI.</li> <li>• Serious underlying arrhythmias.</li> <li>• Serious or worsening angina.</li> <li>• TMJ</li> <li>• Pregnancy (Category D).</li> <li>• Do not eat or drink 15 min. prior to use.</li> <li>• May stick to and damage dental work.</li> </ul>	<ul style="list-style-type: none"> <li>• Recent (≤ 2 wks) MI.</li> <li>• Serious underlying arrhythmias.</li> <li>• Serious or worsening angina.</li> <li>• Pregnancy (Category D).</li> <li>• Do not use more than one at a time or one after the other.</li> <li>• Do not eat or drink 15 min. prior to use.</li> </ul>	<ul style="list-style-type: none"> <li>• Recent (≤ 2 wks) MI.</li> <li>• Serious underlying arrhythmias.</li> <li>• Serious or worsening angina.</li> <li>• Severe reactive airway disease.</li> <li>• Pregnancy (Category D).</li> </ul>	<ul style="list-style-type: none"> <li>• Recent (≤ 2 wks) MI.</li> <li>• Serious underlying arrhythmias.</li> <li>• Serious or worsening angina.</li> <li>• Pregnancy (Category D).</li> <li>• Severe reactive airway disease).</li> </ul>
Pros	<ul style="list-style-type: none"> <li>• Easy to use; better compliance.</li> <li>• Steady dose (even when sleeping).</li> <li>• Can combine with flexible dosing NRT.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible dosing.</li> <li>• Helps with predictable urges (e.g. after meals).</li> <li>• Keeps mouth busy.</li> <li>• Use in combination with patch and for relapse prevention.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible dosing.</li> <li>• Helps with predictable urges (e.g. after meals).</li> <li>• Keeps mouth busy.</li> <li>• Use in combination with patch and for relapse prevention.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible dosing.</li> <li>• Helps with predictable urges (e.g. after meals.)</li> <li>• Keeps hands and mouth busy.</li> <li>• Use in combination with patch and for relapse prevention.</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible dosing.</li> <li>• Helps with predictable urges (e.g. after meals).</li> <li>• Use in combination with patch and for relapse prevention.</li> </ul>
Cons	<ul style="list-style-type: none"> <li>• May irritate skin.</li> <li>• May disturb sleep.</li> <li>• Can't adjust dose.</li> </ul>	<ul style="list-style-type: none"> <li>• Need to use correctly – "chew and park."</li> <li>• May cause nausea, hiccups, coughing, heartburn, headache and flatulence.</li> </ul>	<ul style="list-style-type: none"> <li>• May cause insomnia.</li> <li>• May cause some nausea, hiccups, heartburn, coughing, headache and flatulence.</li> </ul>	<ul style="list-style-type: none"> <li>• May irritate mouth and throat (improves with use).</li> <li>• Does not work well below 40 degrees.</li> </ul>	<ul style="list-style-type: none"> <li>• Need to use correctly (DO NOT INHALE).</li> <li>• Nasal irritation is common.</li> <li>• May cause dependence.</li> </ul>
Availability	Over-the-counter	Over-the-counter (regular, mint, orange)	Over-the-counter (regular, cherry, mint)	Prescription	Prescription
Cost per day Portland Pharmacies	\$3.25 = all strengths	Brand = \$5.25, 2 or 4 mg. (9 pcs) Generic: 4 mg.= \$4.32, 2 mg.= \$3.90	Brand = \$4.77 (9 pcs.) Generic = \$4.32 (9 pcs.)	\$6.18 = 6 cartridges	\$2.90 = 8 doses

\* Odds ratio (OR) = odds of remaining abstinent after 6 months compared to placebo

## Smoking Cessation Pharmacology at OHSU 2007: Non-Nicotine Medications

Therapy Efficacy	BUPROPION SR 150 mg. (OR = 2.1)* Zyban®/Wellbutrin®	VARNEICLINE (OR = 3.68)* Chantix®	For all medications
Length of Treatment	<ul style="list-style-type: none"> <li>7-12 weeks.</li> <li>May take up to 6 months of total therapy to prevent relapse.</li> </ul>	<ul style="list-style-type: none"> <li>12 weeks.</li> <li>If quit at 12 weeks may take for additional 12 weeks to prevent relapse.</li> </ul>	<ul style="list-style-type: none"> <li>Patients should continue on medications even if not successfully quit at first. Research shows that up to 8 weeks may be needed to fully quit.</li> <li>Symptoms or history of substance use and/or depression reduce success in quitting. Recommend treating these conditions first whenever possible before beginning tobacco dependence treatment.</li> <li>Smoking cessation may <i>increase</i> the blood levels of the following medications.               <ul style="list-style-type: none"> <li>Antipsychotics: haloperidol, chlorpromazine, fluphenazine, olanzapine, clozapine.</li> <li>Antidepressants: clomipramine, desipramine, doxepin, imipramine, nortriptyline.</li> <li>Mood stabilizers: carbamazepine</li> <li>Anxiolytics: desmethyldiazepam, oxazepam.</li> <li>Others: heparin, insulin, tacrine, acetaminophen, caffeine, warfarin.</li> </ul> </li> <li>Women metabolize nicotine more rapidly than men especially when pregnant women and on birth control. NRT dose may need to be adjusted upward to increase efficacy.</li> <li>For complete prescribing instructions, please refer to the manufacturers' package inserts.</li> </ul>
Dosing	<ul style="list-style-type: none"> <li>7-day up titration prior to quitting.</li> <li>Days 1-3; 150 mg tablet each am.</li> <li>Days 4-end; 150 mg tablet am and pm.</li> <li>Doses should be &gt; 8 hours apart.</li> <li>Dose not adjusted by # cigs smoked per day.</li> <li>May be combined with NRT.</li> </ul>	<ul style="list-style-type: none"> <li>7-day up titration prior to quitting.</li> <li>Days 1-3; .5 mg. white tablet per day.</li> <li>Days 4-7; .5 mg. white tablet twice per day, am and pm.</li> <li>Days 8 to end of treatment; 1.0 mg light blue tablet twice per day.</li> <li>Take after eating with full glass of water.</li> <li>Doses should be &gt; 8 hrs apart.</li> <li>Dose not adjusted by # cigs smoked per day.</li> </ul>	
Precautions	<ul style="list-style-type: none"> <li>Immediate release form of Wellbutrin® increases seizure risk compared to Sustained Release (SR) or Extended Release (XL) forms.</li> <li>Do not use with seizure disorder, heavy drinking, eating disorders, or while on monoamine oxidase inhibitor.</li> <li>Can increase suicidal thoughts in children and adolescents.</li> <li>Can cause agitation.</li> </ul>	<ul style="list-style-type: none"> <li>Doseage adjustment is recommended for patients with severe renal impairment.</li> <li>Not recommended for combination therapy with NRT.</li> <li>Not tested in children or pregnant women.</li> <li>Can cause sleep disturbances and abnormal dreams. (Take second dose earlier in day.)</li> <li>Can cause nausea – up to 30% of patients. (Dose can be reduced to .5 mg twice per day if nausea cannot be tolerated.)</li> </ul>	
Pros	<ul style="list-style-type: none"> <li>Easy to use</li> <li>Reduces urge to smoke</li> </ul>	<ul style="list-style-type: none"> <li>Easy to use.</li> <li>Reduces urge to smoke + satisfaction from smoking.</li> </ul>	
Cons	<ul style="list-style-type: none"> <li>May disturb sleep</li> <li>May cause dry mouth</li> </ul>	<ul style="list-style-type: none"> <li>Nausea or sleep disturbances can be a problem for some.</li> </ul>	
Availability	Prescription Available as generic: bupropion SR 150mg.	Prescription	
Cost per day Portland Pharmacies	Zyban® = \$5.18/day Wellbutrin® SR 150 = \$5.29/day Generic bupropion - \$2.97/day	\$4.50 per day for 2 week "starter package." \$3.79/day for 30 day continuing package.	

\* Odds ratio = odds of remaining abstinent after 6 months compared to placebo