## NICOTINE REPLACEMENT THERAPY (NRT) FORMULATIONS

<table>
<thead>
<tr>
<th>GUM</th>
<th>LOZENGE</th>
<th>TRANSDERMAL PATCH</th>
<th>NASAL SPRAY</th>
<th>ORAL INHALER</th>
<th>BUPROPION SR</th>
<th>VARENICLINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicorette Generic OTC 2 mg, 4 mg original, cinnamon, fruit, mint</td>
<td>Nicorette Lozenge, Generic OTC 2 mg, 4 mg; cherry, mint</td>
<td>NicoDerm CO, Generic OTC (NicoDerm CO, generic) Rx (generic) 7 mg, 14 mg, 21 mg (24-hour release)</td>
<td>Nicotrol NS Rx Metered spray 10 mg/mL aqueous nicotine solution</td>
<td>Nicotrol Inhaler Rx 10 mg cartridge delivers 4 mg inhaled nicotine vapor</td>
<td>Zyban, Generic</td>
<td>Chantix</td>
</tr>
</tbody>
</table>

### Precautions
- **Recent** (< 2 weeks) myocardial infarction
- Serious underlying arrhythmias
- Serious or worsening angina pectoris
- Temporomandibular joint disease
- Pregnancy and breastfeeding
- Adolescents (<18 years)

### Dosing
- **1st cigarette ≤30 minutes after waking:** 4 mg
- **1st cigarette >30 minutes after waking:** 2 mg
- Weeks 1–6: 1 piece q 1–2 hours
- Weeks 7–9: 1 piece q 2–4 hours
- Weeks 10–12: 1 piece q 4–8 hours
  - Maximum: 24 pieces/day
  - Chew each piece slowly
  - Park between cheek and gum when peppery or tingling sensation appears (~15–30 chews)
  - Resume chewing when tingle fades
  - Repeat chew/park steps until most of the nicotine is gone (tingle does not return; generally 30 min)
  - Park in different areas of mouth
  - No food or beverages 15 minutes before or during use
  - Duration: up to 12 weeks

### Oral Inhaler
- **10 cigarettes/day:**
  - 4 mg (days 1–7)
  - 14 mg/day x 2 weeks
  - 7 mg/day x 2 weeks
- **≥10 cigarettes/day:**
  - 14 mg/day x 6 weeks
  - 7 mg/day x 2 weeks
  - May wear patch for 16 hours if patient experiences sleep disturbances (remove at bedtime)
  - Duration: 8–10 weeks

### Bupropion SR
- **150 mg po q AM x 3 days, then 150 mg po bid**
- **Do not exceed 300 mg/day**
- **Begin therapy 1–2 weeks prior to quit date**
- **Allow at least 8 hours between doses**
- **Avoid bedtime dosing to minimize insomnia**
- **Dose tapering is not necessary**
- **Duration:** 7–12 weeks, with maintenance up to 6 months in selected patients

### Varenicline
- **Severe renal impairment** (dosage adjustment is necessary)
- **Pregnancy (category C) and breastfeeding**
- **Adolescents (<18 years)**
- **Warning:** BLACK-BOXED WARNING for neuropsychiatric symptoms

### Contraindications:
- Seizure disorder
- Concomitant bupropion (e.g., Wellbutrin) therapy
- Current or prior diagnosis of bulimia or anorexia nervosa
- Simultaneous abrupt discontinuation of alcohol or sedatives/benzodiazepines
- MAO inhibitors in preceding 14 days; concurrent use of reversible MAO inhibitors (e.g., linezolid, methylene blue)

### Dose tapering is not necessary
- **Boxed Warning**

### Dosing adjustment is necessary for patients with severe renal impairment
- **Duration:** 12 weeks; an additional 12-week course may be used in selected patients
**Nicotine Replacement Therapy (NRT) Formulations**

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<tbody>
<tr>
<td><strong>ADVERSE EFFECTS</strong></td>
<td></td>
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<tr>
<td>• Mouth/jaw soreness</td>
<td>• Nausea</td>
<td>• Local skin reactions (erythema, pruritus, burning)</td>
<td>• Nasal and/or throat irritation (hot, peppery, or burning sensation)</td>
<td>• Mouth and/or throat irritation</td>
<td>• Insomnia</td>
<td>• Nausea</td>
</tr>
<tr>
<td>• Hiccups</td>
<td>• Hiccups</td>
<td>• Headache</td>
<td>• Cough</td>
<td>• Cough</td>
<td>• Dry mouth</td>
<td>• Sleep disturbances (insomnia, abnormal/vivid dreams)</td>
</tr>
<tr>
<td>• Dyspepsia</td>
<td>• Cough</td>
<td>• Sleep disturbances (insomnia, abnormal/vivid dreams); associated with nocturnal nicotine absorption</td>
<td>• Rhinitis</td>
<td>• Rhinitis</td>
<td>• Nervousness/difficulty concentrating</td>
<td>• Constipation</td>
</tr>
<tr>
<td>• Hypersalivation</td>
<td>• Heartburn</td>
<td>• Tearing</td>
<td>• Sneezing</td>
<td>• Dysfunction</td>
<td>• Nausea</td>
<td>• Flatulence</td>
</tr>
<tr>
<td>• Effects associated with incorrect chewing technique:</td>
<td>• Headache</td>
<td>• Constipation</td>
<td>• Nausea/vomiting</td>
<td>• Dizziness</td>
<td>• Vomiting</td>
<td>• Neuropsychiatric symptoms (rare; see PRECAUTIONS)</td>
</tr>
<tr>
<td>– Lightheadedness</td>
<td>• Flatulence</td>
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<tr>
<td>– Nausea/vomiting</td>
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<tr>
<td>– Throat and mouth irritation</td>
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</table>

| ADVANTAGES | | | | | | |
| • Might serve as an oral substitute for tobacco | • Might serve as an oral substitute for tobacco | • Once daily dosing associated with fewer compliance problems | • Can be titrated to rapidly manage withdrawal symptoms | • Might serve as an oral substitute for tobacco | • Once daily oral dosing is simple and associated with fewer compliance problems | • Nausea |
| • Might delay weight gain | • Might delay weight gain | • Of all NRT products, its use is least obvious to others | • Can be used in combination with other agents to manage withdrawal symptoms | • Can be used in combination with other agents to manage withdrawal symptoms | • Might delay weight gain | • Sleep disturbances (insomnia, abnormal/vivid dreams) |
| • Can be titrated to manage withdrawal symptoms | • Compared to the gum, nasal spray and inhaler, its use is less obvious to others | • Can be used in combination with other agents; delivers consistent nicotine levels over 24 hours | • Can be used in combination with other agents to manage situational urges | • Can be used in combination with other agents to manage withdrawal symptoms | • May be beneficial in patients with depression | |
| • Can be used in combination with other agents to manage withdrawal symptoms | • Can be used in combination with other agents to manage withdrawal symptoms | | | | | |

| DISADVANTAGES | | | | | | |
| • Need for frequent dosing can compromise compliance | • Need for frequent dosing can compromise compliance | | | | | |
| • Might be problematic for patients with significant dental work | • Gastrointestinal side effects (nausea, hiccups, heartburn) might be bothersome | | | | | |
| • Proper chewing technique is necessary for effectiveness and to minimize adverse effects | • When used as monotherapy, cannot be titrated to acutely manage withdrawal symptoms | | | | | |
| • Gum chewing may not be acceptable or desirable for some patients | • Not recommended for use by patients with dermatologic conditions (e.g., psoriasis, eczema, atopic dermatitis) | | | | | |

| COST/B DAY | | | | | | |
| 2 mg or 4 mg: $1.90–$3.70 (8 pieces) | 2 mg or 4 mg: $2.66–$4.10 (8 pieces) | $1.52–$3.48 (1 patch) | $5.00 (8 doses) | $8.51 (6 cartridges) | $2.72–$6.22 (2 tablets) | $8.24 (2 tablets) |

1 Marketed by GlaxoSmithKline.  
2 Marketed by Pfizer.  
3 The U.S. Clinical Practice Guideline states that pregnant smokers should be encouraged to quit without medication based on insufficient evidence of effectiveness and theoretical concerns with safety. Pregnant smokers should be offered behavioral counseling interventions that exceed minimal advice to quit.  
4 In July 2009, the FDA mandated that the prescribing information for all bupropion- and varenicline-containing products include a black-boxed warning highlighting the risk of serious neuropsychiatric symptoms, including changes in behavior, hostility, agitation, depressed mood, suicidal thoughts and behavior, and attempted suicide. Clinicians should advise patients to stop taking varenicline or bupropion SR and contact a healthcare provider immediately if they experience agitation, depressed mood, and any changes in behavior that are not typical of nicotine withdrawal, or if they experience suicidal thoughts or behavior. If treatment is stopped due to neuropsychiatric symptoms, patients should be monitored until the symptoms resolve.  
5 Wholesale acquisition cost from Red Book Online. Thomson Reuters, October 2014.  

Abbreviations: MAO, monoamine oxidase; NRT, nicotine replacement therapy; OTC, over-the-counter (non-prescription product); Rx, prescription product. For complete prescribing information and a comprehensive listing of warnings and precautions, please refer to the manufacturers’ package inserts. Copyright © 1999-2014 The Regents of the University of California. All rights reserved. Updated October 13, 2014.