Pharmacological Options for Smoking Cessation

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Cigarette smoking is the single most important cause of disease and premature death in the United States.
Pharmacological treatment

- NRT - “methadone for the smoker”
  - Gum
  - Patch
  - nasal spray
  - Inhaler
  - lozenge
- bupropion
- varenicline
- all decrease cravings, withdrawal
- 20-25% quit rates at 1 year
Nicotine replacement - gum

- available since 1984
- 2 mg. and 4 mg. strength
- “chew, park, chew, park”
- 2 mg. - 30 pieces/day maximum
- 4 mg. - 20 pieces/day maximum
- wean after 3 months, 6 months maximum
- use in conjunction with patches, bupropion
Nicotine replacement - patches

- 7, 14, 21 mg patches - OTC
- 21 mg X 6 wk, 14 mg X 2 wk, 7 mg X 2 wk
- wean vs. single dose
- first patch - night before quit day
- rashes, abnormal dreams
- no euphoria - no stimulant effect
- no increased risk of MI
Nicotine nasal spray

- one dose: 2 sprays (1 mg)
- minimum: 8 doses/day
- maximum: 40 doses/day (1/2 bottle)
- if not abstinent by week 4 - stop
- use for 8 weeks
- Taper over 4-6 weeks
- nasal irritation limits use
- Cost: at least $ 3/d
Nicotine inhaler

- nicotine deposited in mouth
- 4 mg per insert, 50% absorbed
- 80 puffs in 20 minutes
- 6 - 16 cartridges/day
- 3 months then wean over 3 months
- 40% throat irritation
- $1 per cartridge
Nicotine lozenges (Commit®)

- 2 and 4 mg strengths
- 4 mg if smoke w/in 30 minutes of waking
- 12 week program:
  - Weeks 1-6: 1 lozenge every 1 to 2 hours
  - Weeks 7-9: 1 lozenge every 2 to 4 hours
  - Weeks 10-12: 1 lozenge every 4 to 8 hours
- at least 9 per day for the first 6 weeks
- hiccups, heartburn, nausea
- no more than 5 in 6 hours, 20 per day
- $ 0.30 – 0.50 per lozenge
- Can work when patch, gum failed
COMMIT 4-mg Lozenge Doubles Quit Rates vs Placebo

Bupropion (Zyban®)

- Probably works by increasing dopamine in nucleus accumbens
- 150 mg qd X 3 days, 150 mg b.i.d. X 4 days, then QUIT
- continue for 7 - 12 weeks
- if not stopped by 8 weeks, discontinue
- Can use with nicotine replacement
Bupropion - contraindications

- seizure disorder
- prior or current eating disorder
- MAO inhibitors
- concurrent use of Wellbutrin®
Rates of Continuous Abstinence

- Buproption and nicotine patch
- Bupropion
- Nicotine patch
- Placebo

Jorenby NEJM 1999
# Meta-Analysis Smoking Cessation Medications (placebo controlled trials, 6 month quit rates)

<table>
<thead>
<tr>
<th>Therapy</th>
<th># studies</th>
<th>Abstinence Rate</th>
<th>Odds ratio (vs. placebo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gum</td>
<td>13</td>
<td>23.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Patch</td>
<td>27</td>
<td>17.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Inhaler</td>
<td>4</td>
<td>22.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Nasal spray</td>
<td>3</td>
<td>30.5</td>
<td>2.7</td>
</tr>
<tr>
<td>Bupropion SR</td>
<td>2</td>
<td>30.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Adapted from Fiore MC U.S. Public Health Service, 2000
Varenicline (Chantix®)

- [alpha]4[beta]2 nicotinic acetylcholine receptors reinforce effects of nicotine, maintain smoking
- Partial agonist, antagonist (blocks binding)
- 0.5 mg X 3 d, 0.5 mg b.i.d. X 4 d, 1 mg b.i.d.
- Stop smoking after 7 days on medicine
- Can use for up to 6 months – preferable
- Probably higher rates of quitting
- Nausea, constipation, abnormal dreams
- Reports of suicidal ideation, depression
  - No evidence of causal relationship
  - Probably due to cessation of addiction
- Costs about $ 3-4/day
weeks 9–52: varenicline vs placebo, \( P < .001 \); varenicline vs bupropion, \( P = .004 \); bupropion vs placebo, \( P = .08 \).

Second-line medications

- Clonidine: 0.15 – 0.75 mg/d for 3 – 10 weeks
- Nortriptyline: 75 – 100 mg/d for 12 weeks
All pharmacotherapy should *always* be used in conjunction with behavior modification.
How are we doing with our patients?

- 1991:
  - < 50% of patients reported ever being told to stop\(^1\)
- 1998:
  - 67% Ask, 74% Advise, 35% Assist, 8% Follow-up\(^2\)
- 2003: (patients that got prescription)\(^3\)
  - 36% told to set quit date, 25% counseled, 13% advised to follow up

Many smokers do not get the advice and help they need!!!

\(^3\)Solberg LI, et al. Archives of internal medicine, 2005;165:656
The future

- Nicotine vaccine (NicVAX)
  - Phase two trials are promising
  - five shots in six months
  - antibodies attach to nicotine in bloodstream, prevent crossing blood-brain barrier
  - six months after last shot —
    - 14-16% quit rate, 6% w/ placebo

- Different forms of nicotine replacement

- Rimonabant
  - cannabinoid receptor antagonist
  - Also treats obesity
  - Won’t be released in US