Relapse Prevention During and After Pregnancy

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<table>
<thead>
<tr>
<th>Measure</th>
<th>Cost (in $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive counseling w/ patch*</td>
<td>$1,581</td>
</tr>
<tr>
<td>HIV blood donor screening</td>
<td>$14,000</td>
</tr>
<tr>
<td>Flashing lights at rail crossings</td>
<td>$42,000</td>
</tr>
<tr>
<td>Annual mammography</td>
<td>$190,000</td>
</tr>
<tr>
<td>Neonatal intensive care</td>
<td>$270,000</td>
</tr>
<tr>
<td>Universal precautions for HIV</td>
<td>$890,000</td>
</tr>
<tr>
<td>Ejection system for B-58 bomber</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>Seat belts in school buses</td>
<td>$2,800,000</td>
</tr>
</tbody>
</table>

(Tengs et al., 1995)  * Cromwell et al., 1997
Demographics: Pregnant Women and Smoking

- 9-27% of women in the United States smoke
- 25% of women smokers quit on learning they are pregnant = “Spontaneous Quitters”
- 12% of pregnant women smokers quit later in pregnancy
- 6-18% of all pregnant women smoke throughout pregnancy
  - 19% of pregnant women ages 18-19
  - 17% of pregnant women ages 20-24
  - 25% of women with 9-11 years of education
  - 2% of women with some college education
- 35% who quit during pregnancy stay quit
- 65-70% relapse within 1 year after delivery
Mellisa worries about the effect on her unborn child from the sound of jackhammers.
ASK/ASSESS
Multiple Choice

- I have never smoked or smoked < 100 cigarettes in my lifetime.
- I stopped smoking before I found out I was pregnant and am not smoking now.
- I stopped smoking after I found out I was pregnant and am not smoking now.
- I smoke some now, but have cut down since I found out I am pregnant.
- I smoke about the same amount now as I did before I found out I was pregnant.
“Suspended Quitters”
Stotts AL. *Health Psychology*. 2000;19:324-332

- A time-limited “restriction” of smoking vs. an “intentional” behavior change
- Do not use common cognitive and behavioral strategies to the same level as other successful quitters
- Focus is extrinsic: Health Baby (and therefore, temporary)
- Supported by the context of pregnancy
Assess
How likely are you to smoke in the first 6 months after the baby is born?

■ I am going back to smoking.
■ I am going back to smoking, but will control when and where I smoke.
■ I am not sure if I will smoke again.
■ It is somewhat likely.
■ It is not very likely.
■ It is not likely at all.

Adapted from: Stotts, AL. 2000.
## Importance & Confidence

<table>
<thead>
<tr>
<th>Low Importance</th>
<th>Low Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Confidence</td>
<td>High Confidence</td>
</tr>
<tr>
<td>Abstinence is not Important.</td>
<td>Not persuaded that abstinence is important.</td>
</tr>
<tr>
<td>Do not believe they will remain abstinent.</td>
<td>Believe they can remain abstinent if they decide to.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>High Importance</th>
<th>Low Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Confidence</td>
<td>High Confidence</td>
</tr>
<tr>
<td>Want to remain abstinent, but lack the confidence that they will be able to.</td>
<td>It is important not to smoke and are confident they will not smoke again.</td>
</tr>
</tbody>
</table>
A Disconnect

High self-efficacy
(of staying stopped)

vs

Poor development and utilization of coping skills and strategies
The Context of Pregnancy

• Strong belief smoking is harmful to the baby
• Increased social pressures not to smoke
• Nausea
• Change in lifestyle (coffee, alcohol)
Anticipate Specific Post-Partum Issues

• Nausea is gone
• Resume coffee and alcohol
• Stress
• Sleep deprivation
• Loneliness
• Negative mood
• Weight issues
• Other smokers
### Table 2  Logistic regression analysis: variables associated with relapse (n = 270)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable level</th>
<th>% Relapsed</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence to stay quit</td>
<td>Very confident</td>
<td>32</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>None/a little/somewhat</td>
<td>51</td>
<td>1.81 (1.05 to 3.12)</td>
</tr>
<tr>
<td></td>
<td>confident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family and friends’</td>
<td>More encouragement</td>
<td>25</td>
<td>1.00</td>
</tr>
<tr>
<td>encouragement to stay quit</td>
<td>Less encouragement</td>
<td>51</td>
<td>2.90 (1.70 to 4.94)</td>
</tr>
<tr>
<td>Number of friends/ family who</td>
<td>None</td>
<td>17</td>
<td>1.00</td>
</tr>
<tr>
<td>smoke</td>
<td>A few</td>
<td>38</td>
<td>3.49 (1.25 to 9.78)</td>
</tr>
<tr>
<td></td>
<td>Most/all</td>
<td>49</td>
<td>5.33 (1.85 to 15.40)</td>
</tr>
</tbody>
</table>

OR, odds ratio; CI, confidence interval

Van’t Hof SM, Wall MA, Dowler DW, Stark MJ. Tobacco Control 2000; 9 (Suppl III) iii64-iii66.
Shift in Thinking…
From “Baby” to “Me”

Pros of Quitting

BABY

Cons of Quitting

• Stress
• Weight control
• Socializing

-----------------------------------------------

• Infant:
  Second Hand Smoke
• My Health
• Money
Assess
It is NOT just about smoking

- The Woman
  - Age
  - Parity
  - SES
  - Dependence
  - Mental Health
  - Her feelings about the pregnancy

- External Factors
  - Partner smoking status
  - Social support
  - Amount of control over living conditions
  - Social Stress

- Importance/Confidence
Depression in Pregnancy

Survey of 487 pregnant women at 18 weeks gestation

• Report of depressive symptoms (CES-D)
  • Non-smoker  12.9%
  • Former smoker  25.1%
  • Current smoker  37.5%

• Confidence about being able to quit
  • Depressed smokers  28.6%
  • Non-depressed smokers  73.5%
Assist

Decision
Expectations
Social Support
Incentives
Relapse Potential
Encouragement/Emphasis

Assist

**Decision** for Quitting: for HER and the baby

**Expectations:** of remaining smoke-free

**Social Support:** smokers and non-smokers

**Incentives:** the positive impact being smoke-free has had on how she feels; the importance of avoiding second-hand smoke
**Relapse Potential:**
- Identify specific cues and triggers
- Develop specific plans
- Social skills training
- Medication

**Encouragement/Emphasis**
- Emphasize the positives of non-smoking at all visits
- Encourage breast feeding
ASSIST

Pharmacotherapy
Currently Available Pharmacologic Therapies

### First line agents

<table>
<thead>
<tr>
<th>Nicotine Replacement Products</th>
<th>Pregnancy Cat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gum</td>
<td>C</td>
</tr>
<tr>
<td>Patch</td>
<td>D</td>
</tr>
<tr>
<td>Inhaler</td>
<td>D</td>
</tr>
<tr>
<td>Nasal Spray</td>
<td>D</td>
</tr>
<tr>
<td>Lozenge</td>
<td>D</td>
</tr>
</tbody>
</table>

| Other                                          |               |
| Bupropion                                     | C             |
| Varenicline                                   | C             |

### Second line agents

| Nortriptyline                                 | D             |
| Clonidine                                     | C             |
FDA Pregnancy Risk Categories

- **“A”**: Controlled studies fail to demonstrate a risk to the fetus in the first trimester

- **“B”**: Animal studies do not indicate a risk to the fetus but there are no controlled human studies showing adverse effect

- **“C”**: Either animal studies have shown significant adverse fetal effects and there are no controlled studies in women or studies in women and animals are not available. Drugs should be given only if the potential benefit justifies the potential risk to the fetus.

- **“D”**: Positive evidence of human fetal risk exists, but benefits in certain situations may make use acceptable despite risks (e.g., if the drug is needed in a life-threatening situation or for a serious disease for which safer drugs cannot be used or are ineffective)

- **“X”**: Studies have demonstrated fetal abnormalities; risks clearly outweigh benefit. The drug is contradicted in pregnancy.
Pharmacotherapy
Nicotine Replacement Therapy

• Introduce as early as possible in pregnancy
• Lowest dose that controls withdrawal symptoms and permits abstinence
• But be prepared to use higher doses
• Use products that allow intermittent dosing
  -- gum, lozenge or inhaler
  -- or take patch off at night
• ? Monitor cotinine
• Emphasize no smoking with NRT
• Role for Bupropion
• ? Role for Varenicline
Accelerated Metabolism of Nicotine and Cotinine in Pregnant Smokers
Dempsey D, Jacob P, Benowitz NL. JPET 301:594-598

• Findings in Pregnancy
  • Nicotine clearance increased 60%
  • Cotinine clearance increased 140%
  • Cotinine T½ decreased to 8.8hrs (vs. 16.6)

• Conclusions
  • The effects of nicotine are anticipated to be less during pregnancy
  • No downward adjustment of NRT is necessary in pregnancy
  • Higher doses of NRT may be necessary to optimize efficacy
  • Lower cotinines do not necessarily reflect less tobacco exposure
Pharmacotherapy
Bupropion in Pregnancy

- “Class C”
- Used to treat Depression in Pregnancy
- Benefits Unknown
- Risks Unknown:

N=136 women exposed in first 12 weeks of pregnancy vs. 133 not exposed

<table>
<thead>
<tr>
<th></th>
<th>Bupropion</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live Births</td>
<td>105</td>
<td>126</td>
</tr>
<tr>
<td>Spontaneous Abortion</td>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>Major Malformations</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Lactation and Post-partum: Recommendations

• Use lowest effective dose of NRT

• Use intermittent dosing product if possible

• Breast feeding should be delayed as long as possible after use of NRT, OR

• “Pump and Dump” after NRT use

• Bupropion is NOT recommended

• Varenicline is NOT recommended
A 10% increase in excise tax increases the probability of quitting by 10%

A 10% increase in tax reduces the likelihood of resuming smoking by 10%

Recommendations

- Interventions should occur throughout pregnancy and breastfeeding; especially in late pregnancy
- Non-judgmental and sensitive approach that builds intrinsic motivation
- Address Partner/social support
- Frame quitting during pregnancy as a “success” to build self-efficacy
- Assess Mental Health
- Integration of other social issues into the treatment plan
### Recommendations

- Identify and practice behavioral and cognitive strategies for specific cues, triggers, situations
- Emphasize benefits to long-term maternal health
- Educate about Second Hand Smoke
- Breast Feeding
- Medications
- Support increase in excise taxes and smoke-free environments
Resources

- American College of Obstetrics & Gynecology: acog.org
- Helppregnantsmokersquit.org
  - Pregnancy and Post-partum Quitline Toolkit
- Smokefreefamilies.org
Resources

- Mullen PD. *Nicotine & Tobacco Research.* 2004; 6:S217-S238