Smoking Cessation

MariBeth Kuntz, PA-C
Duke Center for Smoking Cessation
Objectives

- Tobacco use at population level
- Tobacco use and control around the world
- What works for managing tobacco use
- Common myths and misconceptions
15.1% percent of US population

Drops 0.58% per year

70% would like to quit

Mean attempts = 7

Banks et al., BMC Medicine, 2017; CDC 2015
## Who Smokes?

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>GED</td>
<td>43.0%</td>
</tr>
<tr>
<td>High school graduate</td>
<td>21.7%</td>
</tr>
<tr>
<td>Some college</td>
<td>19.7%</td>
</tr>
<tr>
<td>Associate degree</td>
<td>17.1%</td>
</tr>
<tr>
<td>Undergraduate degree</td>
<td>7.9%</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income Status</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below poverty level</td>
<td>26.3%</td>
</tr>
<tr>
<td>At or above poverty level</td>
<td>15.2%</td>
</tr>
</tbody>
</table>

### Mental Health Conditions:
- 40% of men and 34% of women with a mental health condition smoke
- 31% of all cigarettes are smoked by adults with a mental health condition
Lung Cancer 137,989 (29%)
Chronic Obstructive Pulmonary Disease 100,600 (21%)
Other Diagnoses 31,681 (7%)

Other Cancers 36,000 (7%)
Heart Disease 158,750 (33%)
Stroke 15,300 (3%)

Over 540,000 US Deaths Each Year From Smoking

67% of smokers die from smoking

Banks et al. 2015
2014 Surgeon General’s Report

**Pulmonology:** COPD, asthma exacerbation, pneumonia recurrence

**Cardiovascular:** CV Events (non-linear response), cardiac arrest, stroke, DVT/PE (OR = 1.17), PAD (OR = 5.1).

**Diabetes:** (OR = 1.3)

**Ophthalmology:** Cataracts (OR = 1.6), macular degeneration

**Obstetrics:** Preterm delivery (OR = 1.7), stillbirth, ectopic pregnancy
<table>
<thead>
<tr>
<th>CANCERS CAUSED BY SMOKING</th>
<th>Smokers vs. Non-Smokers</th>
<th>Former Smokers vs. Non-Smokers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder</td>
<td>RR = 2.77 (2.17-3.54)</td>
<td>RR = 1.72 (1.46-2.04)</td>
</tr>
<tr>
<td>Breast</td>
<td>RR = 1.32 (1.10-1.57)</td>
<td>RR = 1.09 (1.02-1.17)</td>
</tr>
<tr>
<td>Cervical</td>
<td>RR = 1.83 (1.51-2.21)</td>
<td>RR = 1.26 (1.11-1.42)</td>
</tr>
<tr>
<td>Lung</td>
<td>RR = 8.43 (7.63-9.31)</td>
<td>RR = 3.85 (2.77-5.34)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>RR = 1.70 (1.40-2.10)</td>
<td>RR = 1.20 (1.10-1.40)</td>
</tr>
<tr>
<td>Esophageal</td>
<td>RR = 2.50 (2.00-3.13)</td>
<td>RR = 2.03 (1.77-2.33)</td>
</tr>
<tr>
<td>Renal</td>
<td>RR = 1.52 (1.33-1.74)</td>
<td>RR = 1.25 (1.14-1.37)</td>
</tr>
<tr>
<td>Leukemia</td>
<td>RR = 1.60 (0.84-2.98)</td>
<td>RR = 1.40 (0.90-2.30)</td>
</tr>
<tr>
<td>Gastric</td>
<td>RR = 1.64 (1.37-1.95)</td>
<td>RR = 1.31 (1.17-1.46)</td>
</tr>
<tr>
<td>Pancreatic</td>
<td>RR = 1.74 (1.61-1.87)</td>
<td>RR = 1.20 (1.11-1.29)</td>
</tr>
<tr>
<td>Liver</td>
<td>RR = 1.70 (1.50-1.90)</td>
<td>RR = 1.49 (1.06-2.10)</td>
</tr>
<tr>
<td>Oral</td>
<td>RR = 3.43 (2.37-4.94)</td>
<td>RR = 1.40 (0.99-2.00)</td>
</tr>
</tbody>
</table>

Smoking Abstinence Rates

- Self-directed quit attempt < 5% abstinence
- Provider Advice and Treatment = 10-12%
- Quitline = 11%
- Specialized Treatment = 40-50%

Fiore, Clinical Practice Guideline, 2008; Lee et al. Anesth Analg, 2015; Davis et al. 2017
Evaluation and Individual Variation

- **High-level Dependence**
  Genetics - 10,000 genes

- **High Stress/ Poor Coping Skills**
  High correlation to relapse

- **Anxiety/Depr./PTSD/Bip/Schiz.**
  30.9% of smokers

- **Alcohol or Drug Use**
  30% smokers drink
  85% relapse

- **Low Self-Efficacy**
  High correlation, pre-quit, post quit

- **Weight Gain**
  15% put on 30 lbs (major risk)

- **Poor Social Support**

- **Health Literacy**

- **Economic Challenges**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Relative Risk</th>
<th>Abstinence Rate for placebo = 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varenicline</td>
<td>RR = 2.43</td>
<td>24%</td>
</tr>
<tr>
<td>Patch + Immediate Release Nicotine</td>
<td>RR = 2.33</td>
<td>23%</td>
</tr>
<tr>
<td>Nicotine Patch</td>
<td>RR = 1.75</td>
<td>18%</td>
</tr>
<tr>
<td>Nicotine Gum</td>
<td>RR = 1.59</td>
<td>16%</td>
</tr>
<tr>
<td>Nicotine Lozenge</td>
<td>RR = 1.59</td>
<td>16%</td>
</tr>
<tr>
<td>Nicotine Inhaler</td>
<td>RR = 1.82</td>
<td>18%</td>
</tr>
<tr>
<td>Nicotine Nasal Spray</td>
<td>RR = 1.93</td>
<td>19%</td>
</tr>
<tr>
<td>Bupropion</td>
<td>RR = 1.71</td>
<td>17%</td>
</tr>
<tr>
<td>Nortriptyline</td>
<td>RR = 1.71</td>
<td>17%</td>
</tr>
<tr>
<td>Clonidine</td>
<td>RR = 1.74</td>
<td>17%</td>
</tr>
</tbody>
</table>

Cahil 2013, Cochrane Review
<table>
<thead>
<tr>
<th>CHARLIE TABLE</th>
<th>Relative risk</th>
<th>Abstinence rate</th>
<th>Studies</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine Matching</td>
<td>RR = 1.16 – 1.38</td>
<td>23%</td>
<td>10 smaller trials</td>
<td>Brokowski 2014</td>
</tr>
<tr>
<td>Varenicline + Bupropion</td>
<td>RR = 1.35 vs. Varenicline</td>
<td>33%</td>
<td>2 trials</td>
<td>OR = 1.52 (Ebbert); OR = 1.89 (Rose)</td>
</tr>
<tr>
<td>Varenicline + Patch</td>
<td>RR = 1.41 vs. Varenicline</td>
<td>34%</td>
<td>2 trials</td>
<td>Koegelenberg 2014; Ramon 2014; Chang 2015</td>
</tr>
<tr>
<td>Adaptive Treatment</td>
<td>RR = 1.56</td>
<td>37%</td>
<td>2 trials</td>
<td>Rose 2014; Rose 2016</td>
</tr>
</tbody>
</table>
Why Use Tobacco

• Many different reasons to initiate, but continuous use and inability to stop due to
  – Dependence and tolerance
  – Cue-induced cravings
  – Withdrawal
    • Alleviated by 1) using tobacco 2) use NRT 3) wait for self-resolution
Treatment options

- Long acting medications
  - Nicotine patch, varenicline, bupropion
- Short acting medications
  - Nicotine gum, lozenge, inhaler or spray

- Second line therapies
  - Nortriptyline, clonidine
  - Nicotine vaccines
EAGLES TRIAL: Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders Robert M Anthenelli, Neal L Benowitz, Robert et al. (April 2016)

8144 participants: 4028 to the non-psychiatric cohort; 4116 to the psychiatric cohort
Assessed for moderate and severe neuropsychiatric adverse events.

Non-psychiatric cohort:
13 (1.3%) of 990 participants varenicline group,
22 (2.2%) of 989 in the bupropion group
25 (2.5%) of 1006 in the nicotine patch group
24 (2.4%) of 999 in the placebo group

Psychiatric cohort:
67 (6.5%) of 1026 participants in the varenicline group
68 (6.7%) of 1017 in the bupropion group
53 (5.2%) of 1016 in the nicotine patch group
50 (4.9%) of 1015 in the placebo group
Differences were non-significant

Abstinence rates vs. placebo:
Varenicline OR = 3.61
Nicotine Patch OR = 1.68
Bupropion = 1.75
FDA revises description of mental health side effects for Chantix (varenicline) and Zyban (bupropion)

• **12-16-2016:** “As a result of our review of the large clinical trial, we are removing the Boxed Warning, FDA’s most prominent warning, for serious mental health side effects from the Chantix drug label. The language describing the serious mental health side effects seen in patients quitting smoking will also be removed from the Boxed Warning in the Zyban label.”
Evidence-Based Behavioral Treatment

- Motivational Interviewing (OR = 1.2)
- Contracting (OR = 1.2)
- Skills Training (CBT) (OR = 1.7)
- Mindfulness (OR = 1.6)
- Social Support (OR = 1.5)

Follow-Up

1 year of Phone/IVR/SMS/Email vs. no Follow Up

- Ottawa Model (29.4% vs. 18.3%)
- Harvard Model (26.0% vs. 15.0%)

Joseph et al. 2011; Reid et al. 2010; Rigotti et al. 2014
What Improves Outcomes?

- Evaluation
- Medications
- Behavioral Treatment
- Follow up

Considerations

• Relapses
• “Smoking relaxes me when I smoke”
• “Medications are dangerous and I don’t need them to quit?”
• Chantix horror stories
• Whole person treatment
• E-cigarettes
The Duke Smoking Cessation Program

1. Arrival – written evaluation, CO, spirometry.
2. Medical provider visit (PA, TTS)
3. Behavioral provider as needed
4. Phone based follow up (MA, TTS)
Fagerström Test for Nicotine Dependence

1. How soon after you wake up do you smoke your first cigarette?
   Within 5 minutes  (3 points)
   5 to 30 minutes  (2 points)
   31 to 60 minutes (1 point)
   After 60 minutes (0 points)

2. Do you find it difficult not to smoke in places where you shouldn't, such as in church or school, in a movie, at the library, on a bus, in court or in a hospital?
   Yes  (1 point)
   No  (0 points)

3. Which cigarette would you most hate to give up: which cigarette do you treasure the most?
   The first one in the morning (1 point)
   Any other one (0 points)

4. How many cigarettes do you smoke each day?
   10 or fewer  (0 points)
   11 to 20  (1 point)
   21 to 30  (2 points)
   31 or more (3 points)

5. Do you smoke more during the first few hours after waking up than during the rest of the day?
   Yes  (1 point)
   No  (0 points)

6. Do you still smoke if you are so sick that you are in bed most of the day, or if you have a cold or the flu and have trouble breathing?
   Yes  (1 point)
   No  (0 points)

Scoring: 7 to 10 points = highly dependent; 4 to 6 points = moderately dependent; less than 4 points = minimally dependent.
Other Assessments

• Nicotine withdrawal – mood and physical symptoms scale (2 items)
• Alcohol use - AUDIT-c
• Drug abuse – drug abuse screening testing
• Depression – PHQ-9
• Anxiety- GAD-7
• Stress – perceived stress scale
Follow Up Visits

- Carbon monoxide trending
- Checking on behavioral changes
- Expectations for withdrawal
- Explain realistic length of treatment plan
- Lung cancer screening discussion
Insurance Coverage for Services

• Visits
  – Covered by Medicaid, Medicare, and private insurances

• Behavioral Treatments
  – Covered by insurance

• Medications
  – Medicaid covers all meds
  – Medicare/Private covers prescription medications
  – Patient assistance programs available
Duke Center for Smoking Cessation

- The Duke Center for Smoking Cessation is committed to researching novel treatments to help smokers break the addiction of nicotine.
- 919-613-QUIT (7848)
- 2424 Erwin Rd, Ste 201
  Durham, NC 27705
- Email: smoking@duke.edu