Smoking Cessation in 2016:
Behavioral Interventions,
Pharmacotherapy, and the (?) role of Vaping

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Core Investigator, VA Center of Innovation for Veteran-Centered and Value-Driven Care
Roadmap of Talk

Review Basics

Case-based presentation to help highlight recent evidence about:

- MI to assist smokers not yet ready to quit
- Pharmacotherapy comparative efficacy and risks
- Lung cancer screening as a teachable moment
- Controversial role of Electronic Nicotine Delivery Devices (ENDs)/”Vaping”
Burden of Cigarette Smoking

Percentage of adults who were current cigarette smokers,* overall and by gender – National Health Interview Survey, United States, 2005-2014

- 20.9%
- 16.8%

- 480,000 premature deaths annually (1 in 5)
- 16 million with smoking-related disease
- $300 billion in direct costs/lost productivity

* Persons who reported smoking ≥100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days.

Disparities in Smoking Prevalence (2014)

- Men: 19%
- Women: 15%
- 18-24: 20%
- 25-44: 9%
- 45-64: 10%
- >65: 11%
- Am. Ind/Alaskan: 29%
- Asian: 10%
- Blacks: 18%
- Hispanics: 18%
- Whites: 43%
- GED: 26%
- High school: 21%
- Undergrad: 21%
- Grad school: 13%
- Poverty Level: 15%
- Midwest: 21%
- South: 21%
- Northeast: 13%
- West: 13%

Source: [http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking)
Uniformly Low Provision of Counseling and/or Cessation Medications to Current Smokers

National Ambulatory Medical Care Survey, United States, 2010

www.cdc.gov
Key Steps to Smoking Intervention: 5 A’s

ASK about smoking

ADVISE to quit through clear, personalized messages

ASSESS willingness to quit

ASSIST in quitting

ARRANGE follow-up and support

www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco.5steps.html
Assessing Willingness to Quit

**PRECONTEMPLATION** – no plans to quit within 6 months

**CONTEMPLATION** - considering in next 6 months

**PREPARATION** – quit attempts last year; planning 30 days

**ACTION** – not currently smoking; stopped within 6 months

**MAINTENANCE** – stopped smoking >6 months but < 5yrs
The USPSTF recommends that clinicians ask all adults about tobacco use, advise them to stop using tobacco, provide behavioral interventions and U.S. Food and Drug Administration-approved pharmacotherapy for cessation to adults who use tobacco. (Grade A Recommendation)
Effective Behavioral Interventions

**Intensity:**
- Minimal (<20 min in 1 visit) & intensive (>20 min + 1 follow-up) both increase % quit and remain off at 6 months
- Dose response (more frequent or longer sessions improve cessation)

**Duration:**
- Brief, in-person behavioral counseling (<10 minutes) increases % quit and remains off at 1 year
- Even minimal time (< 3 minutes) may be effective

Ann Int Med. 2015; 163:622-634
Effective Behavioral Interventions

**Frequency:**
- ≥ 4 counseling sessions
- Cessation rates may plateau after total 90 minutes

**Format:**
- In-person counseling (individual or group)
- Telephone counseling
- Tailored, print-based self-help materials
Effective Behavioral Interventions

**Provider:**
- In-person: physicians, nurses, psychologists, social workers, cessation counselor
- Phone: counselors or health care providers trained to advise over phone

**Content:**
- Social support
- Training in practical problem solving skills

Ann Int Med. 2015; 163:622-634
FDA-Approved Pharmacotherapy

Nicotine Replacement Therapy:
- Patch
- Gum
- Lozenge
- Inhalers
- Nasal Spray

Varenicline

Bupropion
Case 1: Assisting Smokers Not Yet Ready

Ms. PreC is a 54 year old woman with COPD, and a 60 pack-year smoking history who comes to pulmonary clinic for follow-up. During the interview, she says:

“I know smoking is bad for me and is making my cough and shortness of breath worse. But I just can’t stop—everyone I know smokes so I’m always around it.”

Which of the following responses is consistent with using a motivational interview strategy to counsel patients not yet ready to quit?
Case 1: Assisting Smokers Not Yet Ready

A) “But if you don’t stop smoking, your COPD symptoms will only get worse.”

B) “Here are your most recent pulmonary function tests—see how your FEV₁ has continued to decline since we last checked? Now is the time to stop smoking.”

C) “I hear you saying that you can’t imagine how you would not smoke with your friends, but at the same time you worry about how it is affecting you. How could your life change for the better if you stopped smoking?”

D) “Quitting smoking is one of the most important things you can do for your health. I really encourage you to consider the patch.”
Motivational Interviewing

Patient-centered counseling style

Elicits “change talk” from the patient

Allows patient to explore and resolve ambivalence about behavior changes

- Amplify discrepancies between current behavior (smoker) and broader goals (smoke free)

- Compared to no treatment, increases cessation 5-17%
- Compared to brief advice or usual care:
  - RR for quitting 1.26 (95% CI 1.16-1.36)
  - Primary Care or psychologists, multiple sessions, <20 minutes increases yield

Framework of Motivational Interviewing

**SPIRIT**
- **Autonomy** (vs. Authority)
- **Collaboration** (vs. Confrontation)
- **Evocation** (vs. Education)

**Principles**
- Roll with resistance: “You may not be ready...”
- Express empathy: “I know this is hard....”
- Develop discrepancy: “You want to see your grandkids, but smoking is shortening your life.”
- Support self-efficacy: “I know you can...”

**Micro skills**
- Open-ended questions: “How is smoking affecting your health?”
- Affirmations: “You are such a strong person...”
- Reflective Listening: “I heard you say...”
- Summaries

**Change talk**
- Desires
- Ability
- Reason
- Need

**Commitment**
- Commitment
- Activation
- Taking steps

**Behavior Change**

http://www.motivationalinterviewing.org/
MI Strategies: 5 R’s

**RELEVANCE** – *encourage patient to identify personal relevance*
- patient disease/risk, family or social situation, health concerns, etc.

**RISKS** – *patient verbalizes potential negative consequences*
- Symptoms of shortness of breath, exacerbations, long-term smoking related diseases

**REWARDS** – *patient identifies potential benefits*
- Improved health, save money, increased self-worth

MI Strategies: 5 R’s (cont.)

ROADBLOCKS – *ask patient to identify barriers*
- Fear of failure, withdrawal, weight gain, etc.

REPETITION- *every visit*
- Reassurance that patients often need multiple quit attempts

Case 1: Assisting Smokers Not Yet Ready

A) “But If you don’t stop smoking, your COPD symptoms will only get worse.”

B) “Here are your most recent pulmonary function tests- see how your FEV$_1$ has continued to decline since we last checked? Now is the time to stop smoking.”

C) “I hear you saying that you can’t imagine how you would not smoke with your friends, but at the same time you worry about how it is affecting you. How could your life change for the better if you stopped smoking?”

D) “Quitting smoking is one of the most important things you can do for your health. I really encourage you to consider the patch.”
Mr. ReadytoQuit is a 58 year old Veteran with a 50 pack-year smoking who comes to pulmonary clinic for follow-up of his long-standing COPD. He reports that in the past six months his COPD is the worst it has ever been, and knows it is time to quit smoking. He has tried to quit on his own and with nicotine replacement therapy multiple times in the past, with no success. His past medical history includes a diagnoses of depression, PTSD, atrial fibrillation (rate controlled) and coronary artery disease s/p a RCA stent placed 5 years ago.

In addition to referring him to a smoking cessation class, you plan to prescribe smoking cessation medication. Which of the following statements is most correct?
A) Due to his mental health history, varenicline and bupropion are contraindicated for this patient.

B) Due to his cardiovascular disease, varenicline is contraindicated for this patient.

C) Varenicline may be more effective in helping patients quit successfully than bupropion or NRT.

D) More than 50% of patients taking varenicline report abnormal dreams.
### Nicotine receptor partial agonists for smoking cessation

**Kate Cahill¹, Nicola Lindson-Hawley¹,**
Kyla H Thomas², Thomas R Fanshawe¹,
Tim Lancaster¹

**Editorial Group:** Cochrane Tobacco Addiction Group

**Published Online:** 9 MAY 2016

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Pooled RR (95% CI) Sustained Abstinence ≥ 6 mo</th>
<th>Quality of Evidence</th>
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</thead>
<tbody>
<tr>
<td>Varenicline vs. Placebo</td>
<td>2.24 (2.06 to 2.43)</td>
<td>27 trials 12, 625 people High-quality</td>
</tr>
<tr>
<td>Varenicline vs. Bupropion</td>
<td>1.39 (1.25-1.54)</td>
<td>5 trials 5877 people High-quality</td>
</tr>
<tr>
<td>Varenicline vs. NRT</td>
<td>1.25 (1.14 to 1.37)</td>
<td>8 trials 6264 people Moderate-quality</td>
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</table>
“On July 1, 2009, the US Food and Drug Administration (FDA) announced that it is requiring manufacturers to put a BOXED WARNING on the prescribing information for the smoking cessation drugs Chantix (varenicline) and Zyban (bupropion). The warning will highlight the risk of serious mental health events including changes in behavior, depressed mood, hostility and suicidal thoughts when taking these drugs.”

- **2014**: Pfizer requested black box warning be removed
  - meta-analyses from RCTs and observational data

- **2015**: FDA declined – data quality issues (updated warning with results from above trials)
  - Safety not primary endpoints
  - Observational data- collected after BB warning-selected patients
  - Not all the neuropsychiatric endpoints reported had been investigated
  - Added warnings about interaction with alcohol risk and seizures (rare) to previous warnings (including CV risk)
Pfizer sponsored trial (FDA requested/helped develop)
Randomized, triple-dummy, placebo- and active-controlled
140 centers in 16 countries = 8144 participants (2011-2015)
18-75 years old, ≥10 cigs a day (verified), motivated to quit
  Two cohorts:
    With psychiatric illness
      MDD, Bipolar, Schizophrenia, Anxiety Disorders
      Stable for past 6 mo; no med changes last 3 mo
    Without psychiatric illness
Primary Safety Endpoint:
- Composite measure of moderate to severe neurpsych events

Primary Efficacy Endpoint:
- Biochemically confirmed abstinence at 9-12 weeks

Intervention Groups: 12 weeks treatment, 12 weeks off
- All got brief counseling each visit
- Randomized: 1:1:1:1
  - Varenicline 1 mg bid
  - Bupropion 150 mg bid
  - Nicotine patch 21 mg + taper
  - Placebos of all medications
    - Varenicline bid active drug + bid placebo bupropion and placebo patch
- 15 face to face visits; 11 telephone calls during 24 weeks
  - Monitored adherence (pill and patch counts ~ 80% across groups)
  - Tobacco/nicotine use – self-report and exhaled CO
  - Assessed neuropsych events: self-report; direct observation and semi-structured interview tool (Neuropsychiatric Adverse Events Interview)
  - Validated tools to assess psychiatric symptom severity
  - Evaluated by MH professional if found to be at risk

- Analysis: Generalized linear regression
  - Adjusted for treatment, cohort, region, and interactions

- Efficacy (all); Safety (study)
## Primary Safety Endpoint- Non-Psychiatric Cohort

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<thead>
<tr>
<th></th>
<th>Non-Psychiatric Cohort</th>
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<tbody>
<tr>
<td></td>
<td>Varenicline N=990</td>
<td>Bupropion N=989</td>
<td>Nicotine Patch N=1006</td>
<td>Placebo N=999</td>
</tr>
<tr>
<td>Primary Composite Neuropsych Endpoint</td>
<td>13 (1.3%)</td>
<td>22 (2.2%)</td>
<td>25 (2.5%)</td>
<td>24 (2.4%)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Difference (95% CI)</th>
<th>Vs. Placebo</th>
<th>Vs. Nicotine Patch</th>
<th>Vs. Bupropion</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>-1.28 (-2.40 to -0.15)</td>
<td>-1.07 (-2.21 to 0.08)</td>
<td>-1.19 (-2.30 to -0.09)</td>
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<td>-0.08 (-1.37 to 1.21)</td>
<td>0.13 (-1.19 to 1.45)</td>
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<td></td>
<td>-0.21 (-1.54 to 1.12)</td>
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# Primary Safety Endpoint- Psychiatric Cohort

<table>
<thead>
<tr>
<th></th>
<th>Psychiatric Cohort</th>
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<tbody>
<tr>
<td></td>
<td>Varenicline N=1026</td>
</tr>
<tr>
<td><strong>Primary Composite Neuropsych Endpoint</strong></td>
<td>67 (6.5%)</td>
</tr>
<tr>
<td><strong>Risk Difference (95% CI)</strong></td>
<td></td>
</tr>
<tr>
<td>Vs. Placebo</td>
<td>1.59 (-0.42 to 3.59)</td>
</tr>
<tr>
<td>Vs. Nicotine Patch</td>
<td>1.22 (-0.81 to 3.25)</td>
</tr>
<tr>
<td>Vs. Bupropion</td>
<td>-0.20 (-2.34 to -1.95)</td>
</tr>
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</table>
Most Common Neuropsychiatric Side Effects

<table>
<thead>
<tr>
<th>Psychiatric Cohort</th>
<th>Varenicline N=1026</th>
<th>Bupropion N=1017</th>
<th>Nicotine Patch N=1016</th>
<th>Placebo N=1015</th>
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<tbody>
<tr>
<td>Psychiatric Disorders</td>
<td>405 (39%)</td>
<td>435 (43%)</td>
<td>420 (41%)</td>
<td>354 (35%)</td>
</tr>
<tr>
<td>Abnormal Dreams</td>
<td>118 (12%)</td>
<td>84 (8%)</td>
<td>140 (14%)</td>
<td>53 (5%)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>86 (8%)</td>
<td>105 (10%)</td>
<td>93 (9%)</td>
<td>63 (6%)</td>
</tr>
<tr>
<td>Insomnia</td>
<td>94 (9%)</td>
<td>119 (12%)</td>
<td>104 (10%)</td>
<td>66 (7%)</td>
</tr>
<tr>
<td>Depression</td>
<td>49 (5%)</td>
<td>45 (4%)</td>
<td>47 (5%)</td>
<td>46 (5%)</td>
</tr>
</tbody>
</table>

Nausea most frequent side effect for varenicline (25%); headache for placebo (10%)
## Abstinence at 9-12 weeks

<table>
<thead>
<tr>
<th>Overall Cohort</th>
<th>Varenicline N=2037</th>
<th>Bupropion N=2034</th>
<th>Nicotine Patch N=2038</th>
<th>Placebo N=2035</th>
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</thead>
<tbody>
<tr>
<td>Primary Composite Efficacy Endpoint</td>
<td>33.5%</td>
<td>22.6%</td>
<td>23.4%</td>
<td>12.5%</td>
</tr>
<tr>
<td>OR (95% CI)</td>
<td><strong>3.61</strong> (3.07 to 4.24)</td>
<td><strong>2.07</strong> (1.75 to 2.45)</td>
<td><strong>2.15</strong> (1.82 to 2.54)</td>
<td></td>
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<tr>
<td>Vs. Placebo</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Vs. Nicotine Patch</td>
<td><strong>1.68</strong> (1.46 to 1.93)</td>
<td>0.96 (0.83 to 1.11)</td>
<td></td>
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<tr>
<td>Vs. Bupropion</td>
<td><strong>1.75</strong> (1.52 to 2.01)</td>
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</table>
Conclusions: “The study did not show a significant increase in neuropsychiatric events attributable to varenicline or bupropion relative to nicotine patch or placebo. Varenicline is more effective than placebo, nicotine patch, and bupropion in helping smokers achieve abstinence, whereas bupropion and nicotine patch were more effective than placebo.”

- Data still needs independent review by FDA; black box warning stands as of now (though not contraindicated)
- Highly monitored setting with stable psychiatric issues at baseline
- Probably more motivated to quit than average patient, more adherent to medications
- Unclear how this affects psychiatric risk among patients not enrolling in such a trial
Varenicline and Cardiovascular Risk

2011: FDA issued warning about possible risk, ordered Pfizer to conduct safety studies

2012: Updated safety review of more than 7000 smokers
  - 15 randomized, double-blind, placebo controlled trials ≥ 12 weeks duration
  - Major Adverse Cardiovascular Events (MACE): CV-related death, nonfatal MI, nonfatal stroke

http://www.fda.gov/Drugs/DrugSafety/ucm330367.htm
## Varenicline and Cardiovascular Risk

<table>
<thead>
<tr>
<th></th>
<th>Varenicline (N=4190)</th>
<th>Placebo (N=2812)</th>
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<tbody>
<tr>
<td>MACE Cases</td>
<td>0.31%</td>
<td>0.21%</td>
</tr>
<tr>
<td>Hazard Ratio (95% CI)</td>
<td>1.95 (0.79-4.82)</td>
<td>Referent</td>
</tr>
<tr>
<td>Rate Difference (per 1000 patient years) (95% CI)</td>
<td>6.30 (-2.40-15.10)</td>
<td>Referent</td>
</tr>
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</table>

- Results consistent across time frames and pre-specified sensitivity analyses
- Number of events is small overall, “the power to find statistically significant differences in a signal of this magnitude is low.”
- Advise clinicians/patients to weigh risks vs. benefits
  - Smoking remains a major risk factor for CV disease
  - Varenicline is effective in helping patients quit smoking

http://www.fda.gov/Drugs/DrugSafety/ucm330367.htm
38 RCTs with N=12,706 patients
Cardiovascular serious adverse events and/or all cause mortality during rx or within 30 days of discontinuation

<table>
<thead>
<tr>
<th></th>
<th>CV Events</th>
<th>All</th>
<th>Cardiovascular</th>
<th>Non-cardiovascular</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Varenicline</strong></td>
<td>N=57/7213</td>
<td>1.03 (0.72-1.49)</td>
<td>1.04 (0.57-1.89)</td>
<td>1.03 (0.64-1.64)</td>
</tr>
<tr>
<td><strong>Placebo</strong></td>
<td>N=43/5493</td>
<td>Referent</td>
<td>Referent</td>
<td>Referent</td>
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<thead>
<tr>
<th></th>
<th>Deaths</th>
<th>All</th>
<th>Cardiovascular</th>
<th>Non-cardiovascular</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Varenicline</strong></td>
<td>N=11/7213</td>
<td>0.88 (0.50-1.52)</td>
<td>1.24 (0.40-3.83)</td>
<td>0.77 (0.40-1.48)</td>
</tr>
<tr>
<td><strong>Placebo</strong></td>
<td>N=9/5493</td>
<td>Referent</td>
<td>Referent</td>
<td>Referent</td>
</tr>
</tbody>
</table>
Case 2: Pharmacotherapy efficacy and risks

A) Due to his mental health history, varenicline and bupropion are contraindicated for this patient.

B) Due to his cardiovascular disease, varenicline is contraindicated for this patient.

C) Varenicline may be more effective in helping patients quit successfully than bupropion or NRT.

D) More than 50% of patients taking varenicline report abnormal dreams.
Case 3- Lung Cancer Screening as a Teachable Moment

Mr. NotWorried is a 65 year man with a 40 pack year smoking history. He is establishing care in your pulmonary clinic and reports that he was previously followed at another center with yearly CT scans to screen him for possible lung cancer. His scans have been “negative” thus far. He continues to smoke 1 pack per day.

Longitudinal data from the National Lung Screening Trial shows that a patient with which of the following findings on a prior year’s CT would be the most likely to have quit smoking by the time of their next annual screening CT?
Case 3- Lung Cancer Screening as a Teachable Moment

A) Normal CT

B) Abnormality not suspicious for lung cancer

C) Positive screen, with abnormality suspicious for lung cancer, but stable since prior screen

D) Positive screen, with abnormality suspicious for lung cancer new since prior screen
- Participants from NLST (2002-2009)
- Current smokers at study entry (N=15,489)
  - Excluded those who developed lung cancer in follow-up
- Multivariable longitudinal regression models predicting annual smoking cessation
Adjusted: age, race, education level, marital status, smoking intensity/duration, secondhand smoke, pipe, cigar, study year, center, randomization arm

### Predictor Variables

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Odds ratio for Continued Smoking (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal scan</td>
<td>Referent</td>
</tr>
<tr>
<td>Minor Abn, Not cancer</td>
<td>0.91 (0.86 to 0.97) (p=.005)</td>
</tr>
<tr>
<td>Major Abn, Not cancer</td>
<td>0.81 (0.72 to 0.91) (p=.001)</td>
</tr>
<tr>
<td>Suspicious for CA, stable</td>
<td>0.79 (0.71 to 0.87) (p=.001)</td>
</tr>
<tr>
<td>Suspicious for CA, new</td>
<td>0.66 (0.61 to 0.72) (p=.001)</td>
</tr>
</tbody>
</table>
Lung Cancer Screening as a Teachable Moment

- Veterans participating in Lung Cancer Screening Demonstration Project (7 centers)

- 45 in-depth qualitative interviews about health beliefs related to smoking and lung cancer screening
  - 37 current smokers offered lung cancer screening by PCP

Majority of smokers reflected for first time on what smoking means for current and future health

Zeliadt et al. JAMA Int Med 2015 Sep;175(9):1530-7
Lung Cancer Screening as a Teachable Moment

49% of patients described ways in which screening lowered motivation to quit smoking

- Perception that undergoing an imaging test yields same health benefit as smoking cessation

- Screening and being able to return for additional screening offers protection from lung cancer

- Reinforced belief in some that they are among the “lucky ones” who will avoid the harms of smoking

Zeliadt et al. JAMA Int Med 2015 Sep;175(9):1530-7
Lung Cancer Screening as a Teachable Moment

Screening is not a substitute for Smoking Cessation!!

- USPTF 2013: “All patients enrolled in lung cancer screening program should receive smoking cessation interventions”

- CMS NCD 2015: Requires “counseling on the importance of maintaining abstinence if former smoker, importance of cessation if current smoker, and furnish tobacco cessation interventions.”
Case 3- Lung Cancer Screening as a Teachable Moment

A) Normal CT

B) Abnormality not suspicious for lung cancer

C) Positive screen, with abnormality suspicious for lung cancer, but stable since prior screen

D) Positive screen, with abnormality suspicious for lung cancer new since prior screen
Mr. ReadytoQuit returns to clinic for follow-up after having stopped his varenicline due to difficulties with insomnia. He continues to smoke, and is now not interested in retrying NRT or using bupropion. Instead he asks you whether or not using e-cigarettes is a reasonable alternative to pharmacotherapy.

Which of the following statements is most correct regarding ENDs?
Case 4- The Controversial Role of ENDS

A) ENDS are likely as effective as currently recommended first-line medications for smoking cessation.

B) Although their efficacy is not clear, there are very few safety concerns regarding the use of ENDS.

C) Currently, there is not enough evidence to make a recommendation about ENDS as a smoking cessation intervention.

D) In the United States, ENDS remain unregulated by the FDA.
Hand-held, battery operated: heat liquid nicotine, propylene glycol, glycerin, flavorings

Flavors: caramel apple, waffles, chocolate banana, watermelon, etc.

Newer device- more nicotine, resemble cigarettes less

Common claims to be “safer” than traditional smoking (none FDA approved)

$2.2 billion in revenue in 2014
Efficacy as Smoking Cessation Aid

- **Bullen et al. Lancet 2013:**
  - 657 New Zealanders: randomized to e-cigs, patches or placebo e-cig
  - 6 month abstinence: 7% vs. 6% vs. 4%
  - Underpowered to conclude superiority of e-cigs
  - No difference in adverse events

- **Capenetto et al. PLOSone 2013:**
  - 300 Italians not intending to quit: randomized to 2 levels of nicotine e-cig vs. non-nicotine e-cig
  - Declines in all 3 groups at 12 weeks (22% reduced, 11% quit) and 1 year (10% reduced, 9% quit)
  - No difference between groups
E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis
Sara Kalkhoran, Stanton A Glantz

Systematic Review: 38 studies
Primary Endpoint: Smoking Cessation
Random effects meta-analysis: 20 studies with controls
- 15 cohort studies
- 3 cross-sectional studies
- 2 clinical trials

Odds of quitting was 28% lower among users of e-cigarettes (OR 0.72 (95% CI 0.57-0.91))
“As currently being used...associated with less quitting”

No difference if e-cigs being used for smoking cessation or not

No difference: design, population, comparison group, control variables, time of exposure, verification of abstinence, definition of e-cig use.
Principal Health Concerns

Potential to renormalize cigarette use if allowed where cigarettes now banned
  - Recent survey of e-cig users: 26% used for this reason

Potential to appeal to current non-smokers, particularly kids
  - ~2500 9th graders: those with prior e-cig use, ~3X more likely to use combustible tobacco in subsequent year

Possible health risks
  - Flavorings, propylene glycol, e-cigarette contaminants

Controversial Public Health England Statement

August 2015: “Best estimates show e-cigarettes are 95% less harmful to your health than regular cigarettes.”

• Based on meeting of 12 experts
  – Multi-criteria decisional analysis to synthesize opinions on harms associated with various nicotine products
  – Questions regarding conflicts of interest with funders of the workshop

• Significant controversy has stemmed from statement (Lancet, BMJ, NEJM)

Systematic Review: 76 studies
Investigating:
  Content of fluid/vapor of ECS
  Reports of adverse events
  Human and animal studies

“Due to many methodological problems, severe conflicts of interest (34%), relatively few and often small studies, the inconsistencies and contraindications in results, and lack of long-term follow-up no firm conclusions can be made on the safety of ECS. **However, they can hardly be considered harmless.**”
The USPSTF concludes that the current evidence is insufficient to recommend electronic nicotine delivery systems for tobacco cessation in adults” (Grade I)
The Role of the FDA in the US

- To date, no ENDs manufacturer has applied for/received FDA approval to market drug as smoking cessation tool.

8/2016 - New FDA regulations

- Extends regulatory authority to ALL tobacco products
  - Ecigs, hookahs, cigar and pipe tobacco
- Requires health warnings and bans free samples
- Products on market after 2007 - have to show products meet public health standards to get marketing authorization (3 years from now)
- Requires purchasers to be 18 years or older/no vending

http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm506676.htm
Case 4 - The Controversial Role of ENDS

A) ENDS are likely as effective as currently recommended first-line medications for smoking cessation.

B) Although their efficacy is not clear, there are very few safety concerns regarding the use of ENDS.

C) Currently, there is not enough evidence to make a recommendation about ENDS as a smoking cessation intervention.

D) In the United States, ENDS remain unregulated by the FDA.
Summary

Remember the basics:
- 5 A’s
- Behavioral Interventions + Pharmacotherapy for All

Motivational Interview techniques can be useful when working with patients not ready to quit:
- Roll with resistance
- Empathy
- Develop discrepancies
- Support Self-Efficacy
- OARS
Summary

Pharmacotherapy:
- Varenicline may be most effective
- Individual patients
  - Need to weigh benefit/risk ratios
  - Patient preference
  - Counsel regarding neuropsychiatric and CV events

Lung Cancer Screening:
- Likely a teachable moment
- Screening does not replace cessation
- More research needed—most effective methods
Summary

ENDs:
- Evidence just not there yet
- Need more research into efficacy/effectiveness/safety
- May have role for specific patients that can’t/won’t quit
  - Balance benefits vs. harms