e-Cigarettes: Poison or Panacea?

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Poll: What’s the Story on e-Cigarettes?

A. They come in kid-friendly flavors
B. They can help you stop smoking
C. They can impede smoking cessation
D. They’re better for you than cigarettes
E. We don’t really know what’s in them
F. All of the above

Overview

• What are e-cigarettes and how do they work?
• History: “cigalikes,” “vape pens,” “tanks”
• Growth and usage
• Field trips, “Big Tobacco” and FDA
• Harms and benefits
• What should family doctors do?
• Discussion

What are e-Cigarettes?

• Formally: electronic nicotine delivery systems (ENDS)
• Battery powered, cigarette-shaped
• Vaporize nicotine liquid (“e-juice”) so it can be inhaled
• Introduced in 2006-2007 as “cigalikes” (“slims”)
• Initially available at convenience stores

How do They Work?

• Three parts to all e-cigs:
  – Battery
  – Liquid nicotine
  – Vaporizer/atomizer
• Parts may be replaceable and/or rechargeable
Cigalikes

- Individual disposables for under $10 (I paid $7.50)
- In bulk on the web for $5
- One disposable is equivalent to a pack or so of tobacco cigarettes
- Now rechargeable and refillable w/ cartridges

“Vape pens” and Refillables

- e-Cigarette vaping systems, refillable and rechargeable vape pens (mods, eGos, PVs, etc)
- e-Juice comes in multiple flavors and concentrations

Tanks, Mods, Box Mods

- Lots of names, shapes, sizes, but they all work the same way: flavored liquid nicotine is vaporized and inhaled

The e-Cigarette Family

Vape Shops

- Usually solo or local chain
- Sell a range of vaping eqpt
- e-Juice from different sources
- Kit with battery, juice, charger for $35-$110 ++
- Est. 10-15,000+ in the US

Poll: How Big a US Market in 2015?

A: $500 million
B: $1.3 billion
C: $3.2 billion
D: $4.8 billion
E: No one knows
Growth of e-Cigarettes

- $500 million in US sales in 2012, 0.5% of tobacco products
- Growing fast: estimated to be $4.1 billion in 2016. “Vaping” was OED’s 2014 word of the year!
- Big Tobacco joined the market, spiking sales
- Growth may have slowed, however, especially among cigalikes (but still growing)

Continued Projected US Growth?

- Vape devices expected to pass cigalikes
- 2016 may not be true (projected)
- Still dwarfed by $100 billion conventional cigarette sales

Why Would e-Cig Growth Slow?

- Customer dissatisfactions, esp. cigalikes?
- Inventory backlogs?
- New state (and now Federal) laws?
- Rising safety concerns?
- Public health publicity?

Teen e-Cig Use Triples from 2013-14

- Based on 2011-2014 National Youth Tobacco Surveys
- Significant increase in e-cigarette (and hookah) use
- Significant decrease in cigarette use
- Overall, no change in tobacco use!

Latest High School Data: Good News!

Child e-Cig Use Hugely Important

- Vast majority of smokers start as minors
- Very few smokers start after 18
- The potential exists for starting with e-cigarettes and moving to combustibles
- Flavors of e-cigarettes make them easy to start
- PUBLIC HEALTH PEOPLE ARE FREAKED OUT!
**Poll:** Which of the Big Ts has NO e-Cig?
- A. Altria
- B. Lorillard (now Imperial)
- C. RJ Reynolds
- D. None

**Big Tobacco and e-Cigarettes**
- NJOY was an early, independent cigalike
- Lorillard launched Blu in 2012; then sold it to Imperial when Reynolds American bought Lorillard in 2014
- RJ Reynolds entered in 2013 with Vuse “digital vapor cigarettes”
- Finally, Altria bought Green Smoke and began introducing Mark Ten in 2014; distribution now has caught up with the others

**7-11 Field Trip!**
- Visited my local 7-11
- Plenty of e-cigs available
- Literature, reps also
- Some are integrated into the tobacco cigarette displays
- Sold “behind the counter” (in DC)

**7-11 Field Trip, contd.**
- Vuse (RJR) has multiple varieties and prices
- “Designed and assembled by the tobacco experts at RJR”
- “Perfect puff every time”

**Vuse**
- I paid $10
- Single e-cig, but is rechargeable and refillable
- Comes w USB charger
- Multiple flavors available

**7-11 Field Trip, contd.**
- Blu has varieties and refills and lots of space
- Disposables, tanks, and rechargeables
- “Take back your freedom”
**blu**
- Now owned by Imperial, after RJR acquired Lorillard
- Very aggressive marketing:
  - “Slim. Charged. Ready to go”
- Distinctive blue “ash”

**7-11 Field Trip #2**
- Mark Ten, by Altria, now integrated into combustible display
- Starting to dominate the shelves
- Come with replacement cartridges and charger

**MarkTen**
- Altria purchased Green Smoke, introduced MarkTen
- “FourDraw technology”
- Rechargeable, 2 sizes
- Available in classic, menthol, fusion, mint

**7-11 Field Trip, contd.**
- NJOY has been squeezed down a lot
- “Proudly independent of Big Tobacco”
- Now makes refillable vape pens as well

**NJOY**
- One of the original cigalikes, expanded into vape pens and e-juice
- “Not a tobacco company”
- In and now out of Chapter 11 bankruptcy

**Vape Shop Field Trip!**
- Large selection
- Snide about disposables
- Ex-smoker
- Down-played dangers of e-juice
Vape Shops vs. Convenience Stores

- No one knows how many vape shops there are (est. 10,000+) or how much they sell
- Mom and Pop or small chains
- Convenience stores are the province of Big Tobacco: 300,000 stores is the goal
- Altria and RJR spent more than $150 million in 2014 alone to roll out their products

Poll: Current e-Cig Marketing Restrictions?

A. None allowed
B. Same as cigarettes: no TV or radio, limited billboards and print
C. No TV, but print and billboards allowed
D. No current restrictions

Marketing with the Stars: No Restrictions

Free Promotion from the Stars

Who are the Targets of Flavored e-Cigs?

Marketing and Use by Kids
Harms and Benefits

- **Harms**
  - What's in them?
  - How are they being used?
- **Benefits**
  - Better than tobacco cigarettes?
  - NRT for smoking cessation
  - Harm reduction?

What Goes into Them?

- MarkTen pretty standard: 
  - "tobacco-derived nicotine, propylene glycol, glycerol, water and additional flavors" ("food grade")
- Vape shop e-liquid: similar, but WHO KNOWS?

What Comes out of Them?

- Ctr. for Environmental Health report found that most produced "high levels" of formaldehyde and acetaldehyde only (not of others)
- British study in AIM found e-cig only and NRT only users had "substantially reduced" carcinogens compared to smokers and mixed

Are They as Dangerous as Cigarettes?

- If you smoke them: no, they are very likely safer than tobacco products if the ingredients are as stated:
  - Far fewer carcinogenic particles
  - Less inflammation
  - Better indoor air quality

How Much Nicotine is in Them?

- Impossible to say
  - Different measures (percent or weight)
  - Different smoking styles
  - Different batches of e-juice
  - Different strengths available, both in vape shops and even in cigalikes
- Summary: variable

How About e-Juice?

- **Nasty stuff**: serious poison, esp. in large quantities; attractive, small bottles
- Up to 36mg/mL of nicotine, easily absorbed orally or even cutaneously
- Poison center calls up from 1 to 215/mo from 2010 to 2014: kids and adults
- First death has now been reported: IV nicotine suicide


e-Cigarettes: Yes or No?
And for what?

US Authorities’ Recommendations
- USPSTF: Insufficient evidence to recommend for smoking cessation
- CDC: Potential for harm and benefit
- AAFP: Ban marketing, do more research
- FDA: Adults only, not approved for smoking cessation

- e-Cigs most commonly used tobacco in kids
- Nicotine is dangerous to youth
- e-Cig aerosol is not harmless
- e-Cigs marketed with seductive flavors

SG-recommended Actions
- Prevent access by kids
- Price and tax policies
- Regulation of marketing
- Educational initiatives
- Retail licensure
- Clinicians: caution

RCP Report: “Huge Potential”
- E-Cigs more popular than NRT
- ≤5% of the harm of cigarettes
- Gateway evidence is weak
- “Appear to be effective” in smoking cessation
- Endorsed, but regulations needed

How are e-Cigs being Used?
- Kids
  - Bad: experimentation
  - Bad: smoking initiation
- Adults
  - Good: smoking cessation
  - Good/Bad?: harm reduction
  - Bad: smoking maintenance, initiation
Bad: Kids Experimentation

- Anecdotes: e-cigs cool
- 79K to 263K ↑ in 3 yrs (now going down)
- Twice as many who used e-cigs intend to smoke
- Easy to use and put in your pocket
- Nicotine much more addictive in kids: gateway?

Bad: Kids Smoking Initiation

- Evidence starting to emerge that kids are starting smoking with e-cigarettes and then moving to combustibles; vaping as risk factor for smoking
- Some longitudinal studies show vaping as independent predictor of smoking initiation
- Vaping may change perception of risk of smoking

Good: Smoking Cessation

- A few retrospective studies and small trials
  - Historical: as good as NRT
  - Trial: as good as NRT, better than placebo
  - Vs. nicotine inhaler: preferred
- 2016 Cochrane review judged evidence positive, at least against e-cig placebos, but low quality
- All brands explicitly deny use as smoking cessation tool; none FDA approved

Bad: Smoking Maintenance

- Major public health cessation strategy: make it hard to smoke
- E-Cigarettes make this easier, allow maintenance of smoking
- True extent of this threat unknown; one recent study found smokers using e-cigs may be at increased risk for not being able to quit smoking (not a great study)

Harm Reduction: Good or Bad?

- First tenet of harm reduction: alternative is less harmful than the established harm. **Probably true.**
- Second tenet: use of alternative leads to decreased use of the established harm. **May be true.**
- Is it better to substitute e-cigarettes for conventional cigarettes, even without the intention of quitting?

FDA Regulations, Effective 8/8/16

- Announced May 2016, after a 2-year wait
- Restrictions sales to age 18+, no giveaways, vending
- Safety bottles for e-juice
- Registers manufacturers (incl some vape shops)
- Requires retrospective review of most products by 2018*
- Requires health warnings on all packages and ads
- Prohibits “modified risk” products unless authorized

*Congress has delayed and may repeal this provision!
Problems with FDA Rule

- S-L-O-W: took two years til final rule
- Some provisions don’t take effect for 3 years
- Caused flood of products on the market pre 8/8
- May be delayed by legal maneuvers, new Congress
- No flavor restrictions
- No effect on marketing/advertising (not FDA’s job— FTC is “looking at it”)

The post-FDA Rule World

- Vape shops are scared: “vapocalypse” if they have to register their products, submit to inspections, etc
- Big tobacco presumably loves it, because they’ve got the resources to respond to regulations
- What will the landscape look like in 5-10 years?
  - Vape shops out of business except for a few large chains?
  - e-Cigarettes only at convenience stores?
  - Combustible cigarettes out of business?

Vape Shop Tour: Update

- My local vape shop CLOSED in early 2017

Cool (or Crazy?) Idea:

e-Cigs as a Disruptive Technology

- Ultimate in harm reduction
- Regulate e-cig nicotine content, humectants, additives
- Regulate tobacco cigarette nicotine content down to send people fleeing to e-cigs
- Increase taxes on tobacco cigarettes
- Result: millions of lives saved, cigarettes out of business!

Are We Unintentionally Doing Harm?

- Public health, doctors warning against them
- Some states taxing them
- FDA regulating them
- What if they are much better for you and we’re missing the boat???
- Are we missing a chance to “end smoking as we know it”?

What Should Family Doctors Do? Kids

- Clearly e-cigarettes are a disaster for kids
- Ask all kids about “vaping” and/or “e-cigarette use”
- Make sure parents know about the growth of e-cigarette use in kids and how easy it is to conceal
- Alert all vapers about e-juice safety issues, esp. for young children
- Push for local restrictions on flavors, marketing
Final Poll: What Should Family Doctors Do About e-Cigarettes in Adults?

A. Never recommend e-cigarettes for anyone
B. Recommend them only for smoking cessation in selected patients who fail conventional nicotine replacement therapy
C. Recommend them as a possible harm reduction strategy for some smokers who won’t quit
D. Recommend them for all smokers to put cigarettes out of business

What Should Family Doctors Do? Adults

- Recommend e-cigarettes:
  - Not at all (unproven)
  - For cessation? (as NRT)
  - Partial substitution? (harm reduction)
  - Total substitution? (harm reduction)
- Which e-cigarettes? Vape shops?
- Safety issues, esp with e-juice

Practice Recommendations

- Revise your “smoking” questions to specifically include “vaping” and e-cigarettes: and ask all kids!
- Warn your patients who vape about the safety issues and likely harms
- Consider whether there MAY be a class of patients for whom you recommend e-cigarettes

Suggested Readings


Discussion

Q&A
Thanks!

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