E-Cigarettes: Biblical Myth or Manna from Heaven

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Disclosure

- NDP has received unrestricted educational grant funds from Pfizer to support smoking cessation system changes
- Dr. Goldstein has served on Advisory Boards for Pfizer and Boehringer Pharmaceuticals
Additional Disclosure

- UNC NDP and TPEP mission is to conduct leading edge tobacco policy, prevention and cessation research with a goal of dramatically decreasing tobacco use anywhere and everywhere

- www.ndp.unc.edu
Goals of Presentation
UNC Nicotine Dependence Program

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Electronic cigarettes

Electronic Cigarettes
Welcome to Smoking 2.0

Vapor vs Smoke

- Rechargeable Battery
- Atomizer
- Liquid
- Nicotine
- Cartridge
- Tar Free
- Odorless
- Save $$$
- Smoke Anywhere

- Tar & Ashes
- Deadly Smoke
- Nasty Smell
- Cigarette Butts

nicotine independence program
Electronic cigarettes

- Electronic device replicates cigarette, cigar or other smoking pipes
- Activated by inhaling the device
- On detecting airflow heating element is activated releasing vapor
- Process of smoking electronic cigarettes known as "Vaping"
- Tobacco free but contains varying amounts of nicotine and propylene glycol
- Looks and feels like a tobacco cigarette
- Requires the same mechanical motions
Cigarette use with behavioral, psychological, physical aspects

Supported by $15-30 billion annual marketing
Major Components of an E-Cigarette:

• Lithium-ion rechargeable battery
• Vaporizer with microchip
• Mouth piece with cartridge containing liquid nicotine solution most commonly referred to as the "e-liquid".
• The e-liquid has varying concentrations of liquid nicotine
Health and Legal Issues of E-Cigarettes

- Companies claimed it as alternative to smoking
- The US FDA, on testing these products, indicated that there were toxic chemicals including a carcinogen known to cause cancer in humans
- According to World Health Organization (WHO) e-cigs are not currently used for Nicotine Replacement Therapy due to lack of peer reviewed studies.
- E-cigarettes are currently poorly regulated
E-Cigarette

- Not approved by the FDA

- Recent FDA analysis of two leading brands
  - nicotine levels varied widely and were inconsistent with labeling indicating poor quality control
  - Diethylene glycol (used in antifreeze) and tobacco-specific nitrosamines were detected

- No evidence that e-cig helps people quit
Welcome to ECF, the largest e-cigarette website in the world.

There are tens of thousands of visitors to this site every day, and over 100,000 posts a month on the forum.

Everything you need to know is here. We welcome your questions; just register, then you can post in the New Members Forum and someone will help you. Or, get in touch via our Contacts page, linked at the top and bottom of every page.

For many people, ECF is the start of a new phase of their life - a life without tobacco but every bit as enjoyable. More enjoyable in every way, in fact. Come on in and join us!

If this is your first visit, be sure to check out the FAQ by clicking the link above. You may have to register before you can post; click the register link above to get started.
E-cigarettes a growing market

- Introduced to the U.S. in 2007
- Awareness doubled (16.4% to 32.2%) from 2009-2010
- Ever use increased (0.6% to 2.7%) from 2009-2010

Regan (2010) *Tob Control* E.publish
E-cigarettes public perceptions

- Survey of 3587 people in online smoking cessation or E-cigarette forums

- Reasons for use:
  - Quit or reduce smoking (92%)
  - Less toxic (83%)
  - Cheaper (57%)
  - Locations where smoking prohibited (39%)

Unexpected Consequences

- 42 year old woman
- Smoking e-cigarettes for 7 months
- Diagnosed with: exogenous lipid pneumonia due to e-cigarette use
- First documented health risk of e-cigarette use

McCauley L et al. Chest 2012;141:1110-1113
Representative CT images show the “crazy paving” pattern of patchy ground glass superimposed on interlobular septal thickening.
Photomicrograph of BAL sample shows lipid-laden macrophages (Oil-Red-O stain, original magnification × 100).

McCauley L et al. Chest 2012;141:1110-1113
Acute Pulmonary Effects

- **Aim**: Assess impact of e-cigarette on pulmonary function tests and exhaled nitric oxide

- **Subjects** (healthy nonsmokers) used e-cigarette for 5 minutes
  - Experimental group (n=30) used device with cartridge
  - Control group (n=10) used device without cartridge

- **E-cigarettes were found to have immediate adverse physiologic effects, similar to those see with tobacco smoking**

Vardavas, I et al. Chest 2011; advance online release; doi: 10.1378/chest.11-2443
Additional thoughts

- May undermine smoke-free laws and prevention efforts (Henningfield & Zaatari, 2010)
- Youth and young adults may be at high risk for toxicity from flavored cartridge refills containing lethal doses of nicotine (Yamin, Bitton, & Bates, 2010; Etter, 2010)
- May give children and youth the impression that “vaporing” is harmless (Kushner, Reddy, & Mehrotra, 2011)
Should electric cigarettes be allowed in the workplace
The way forward?

- Observational studies?

- Efficacy or effectiveness not known

- No manufacturers are currently regulated

- May be a gateway to cigarettes for youth