Hookah and Electronic Nicotine Delivery Systems (ENDS)

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Outline

Hookah products and research
Prevalence
Hookah Concerns
FDA
ENDS
Prevalence
Concerns
FDA
Montana Laws

“chillim”
“Quylan”

“Shisha, Boory or Goza”
“Hookah”

“Narghile or Arghile”

“cachimba”
“Lula or Lulava”
Hookah Tobacco (shisha)
- tobacco
- honey/molasses
- fruit flavorings
- glycerin

Shisha Research

Herbal’ shisha products tested contained toxic trace metals and PAHs levels equivalent to, or in excess of, that found in cigarettes. (Hammal et al. Tobacco Control 2013)
Coals

Respiratory exposure to arsenic, nickel, cadmium
(Khalif et al, 2015)

Chemical Analysis and potential health risks of hookah charcoal
(Elsayed, et al., 2016)

Zinc
Iron
Cadmium
Vanadium
Aluminum
Lead
Chromium
Manganese
Cobalt

Similarly, if not higher than found in cigarettes

Coal Analysis cont.

7 carcinogens
39 central nervous system depressants
31 respiratory irritants
Shisha Packaging

Misleading Packaging Descriptors

Nakkash et al., Tobacco Control 2010
“Hookah teaches you patience and tolerance, and gives you an appreciation of good company.”

“The hookah’s been around a long time. The first hookahs were made out of coconuts and showed up in Turkey shortly after the discovery of tobacco. The hookah is also known as a “peace pipe” because of its ability to bring people together of different backgrounds and convictions.”

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2012-13 Adult hookah life-time Use

Adult hookah Current Use


3.8%
National college data

105,000 students from 152 universities

30.5% had ever used a waterpipe/hookah
8.4% within the past month

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Cardiopulmonary Concerns

• Blood pressure, heart rate, and vascular resistance increases (Alomari et al. 2014) (Kadhum et al. 2014)

• Resistance to expiration and decreased pulmonary function (Boskabady et al, 2012-Meo et al., 2014)

• Carbon monoxide exposure (Hakim et al., 2011; Martimosek et al, 2013)
Multiple Patients with Carbon Monoxide Toxicity from Water Pipe Smoking

Simon F. Clarke, MD, CS, Caroline Stephenson, MD, Faizah Farhan, MD, Patricia Ward, MD, Catherine Kesselhaut, MD, Virginia Murray, MD, and Donald Zimmerman

- 12 visits
- Headache, nausea and lethargy
- ER stay = 1-5 hours

Clarke et al. Prehospital and Disaster Medicine Dec 2012

Hookah as a Gateway

The NATION'S HEALTH

Study: Hookah, most associated with the onset of cigarette smoking

Nikkeibing

Published online Feb 8 in JAMA Pediatrics, the study found that never smoke's smoking habits from hospital and the use of chin — in a pharmacokinetic trial of nicotine that offers more to a regular folk quick and it played inside a person's lung...
Mononucleosis - possible

Main symptoms of Infectious mononucleosis
- Glandular
- Pharyngitis
- Fatigue
- Headache
- Nausea
- Rash
- Weight loss
- Lengthened white blood cell count

TB Transmission - one case

Aspergillosis - one case

Invasive aspergillosis can occur as an infection with pneumonic that spreads to heart, lungs, brain and kidneys via the bloodstream.
Acute Eosinophilic Pneumonia cases

• Recent history of smoking hookah consistently over 3-4 weeks

FDA encourages voluntary reporting of adverse experiences from tobacco products

Voluntary reporting enables the FDA and other government agencies to identify and investigate population-based safety signals that may otherwise go unnoticed because of their frequency. To illustrate, in the past (e.g., in the past several years, the smoking habit has been associated with acute eosinophilic pneumonia [AEP]). Of these, five cases were associated with tobacco water pipes. Additionally, these cases required hospitalization and mechanical ventilation for up to 7 days. A fifth case required intravenous corticosteroids for 7 days after mechanical ventilation failed. Although not specifically tobacco related, a fifth case of AEP in a non-smoker water pipe user was also reported.


Long term effects- lip carcinoma

What we do know about hookah smoke?

- One hookah session versus a cigarette
  - 40 times the tar
  - 30 times the carcinogens
  - 2 times the nicotine
  - A lot more carbon monoxide

Blood Nicotine Levels

- Similar to a person who smokes ten cigarettes per day

45 minute session


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FDA Regulation of Hookah (Waterpipe) Tobacco

In 2016, the FDA issued a rule extending the requirements to cover all tobacco products, including hookah tobacco. The rule regulates the manufacture, import, packaging, labeling, advertising, promotion, sale, and distribution of tobacco products. This includes components and parts of new tobacco products that exclude accessories such as lighters, tanks, or inhalation devices.

Components or "parts" include packaging, design, software, or an assembly of materials necessary or reasonably expected to alter the effect of the tobacco product. The rule applies to products for human consumption that contain or consist of tobacco or that are intended for use with tobacco and include parts, such as filters.

Hookah (waterpipe):
- Plasma轻松
- Nose-cooling attachments
- Water filters
- Ceramic/charcoal-based filters
- Other materials

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Electronic Nicotine Delivery Systems
ENDS

- 2003 – First developed in China by Hon Lik, a pharmacist

- 2006 – First imported from China and introduced to Europe

- 2006-07 – Imported from China and introduced to US
Types of E-cigarettes

Cigalikes

Advanced personal vaporizers (APV)
  • AKA eGos

Mods

53.4% used only rechargeable/refillables.
32.1% used both types.
(2015 NYTS data)
Lorillard’s brand

Perceived addiction and harm caused by e-cigarettes were lower in medium- and high-use schools.

2014 NYTS data; Lippert – Nicotine and Tobacco Research, 2016

A marked reduction in cigarette consumption was observed in EC users. A significant reduction in COPD exacerbations was reported.

Preventing youths from beginning use of any tobacco product, including e-cigarettes, is critical to tobacco use prevention and control strategies in the United States. [Department of Health and Human Services]

Monitoring the characteristics of e-cigarette use among youths, including product types, brands, and ingredients, is important to inform strategies.
Montana Data

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Additives

- Propylene Glycol
- Glycerine
- Flavorings

Pellegrino et al. evaluation revealed these proportions:
66% propylene glycol
24% glycerine
<0.1% flavorings
E-liquids are cytotoxic to oropharyngeal tissue, and some liquids can induce relevant DNA damage.


**Flavors**

Diacetyl – chemical linked to Popcorn lung

Found in 75% of flavored electronic cigarettes and refill liquids (Allen et al., 2015)

Has the potential to lead to bronchiolitis obliterans when inhaled.


**Chemical Emissions**

- Tobacco-specific nitrosamines (TSNA's)
- Carcinogenic carbonyl compounds (formaldehyde, acetaldehyde, acrolein)
- Heavy metals= tin, silver, iron, nickel, aluminum and silicate in aerosol 0.1 microns (Williams, et al., 2013)
Systematic review of case reports
Hua and Talbot, 2016

- 6 – negative respiratory effects
- 2- cardiovascular negative effects
- 12- poisonings (3 accidental; 1 misuse; 8 suicidal)
- 2 cases of mechanical failure resulting in explosion

Formaldehyde

VA emissions, including formaldehyde, greatly exceeded values previously reported for conventional ECIGs and combustible cigarettes, both per puff and per unit of nicotine yield

Direct Dripping
Air quality study

- n=9
- Gas phase – nicotine and glycerine
- Carcinogenic PAH increased 20%
- Aluminum increased 2.4 fold

While significant concerns remain about e-cigarettes, for some parents who find it challenging to quit or safely leave their children to smoke outside, e-cigarettes may offer potential for reducing the harm to them and their children.

In the News
Child Nicotine Poisoning Prevention Act Becomes Law
On January 25th, President Barack Obama signed the Child Nicotine Poisoning Prevention Act into law. Championed by the AAP and child health advocates, the law will make great strides in keeping children safe by requiring child-resistant packaging on liquid nicotine containers used to refill e-cigarettes.

3,067 reported exposures to e-cigarettes and liquid nicotine in 2010, with over half occurring in children under the age of six. One child inupstate New York died from liquid nicotine exposure in 2014. Despite the toxicity of these products, there were no federal requirements for child-resistant packaging of liquid nicotine refills. Now, within six months of the law’s enactment, the U.S. Consumer Product Safety Commission will issue a requirement for liquid nicotine containers to have child-resistant packaging, similar to other common household products that are dangerous to children like bleach and prescription medicines.

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"Smoking" or "to smoke" includes the act of lighting, smoking, or carrying a lighted cigar, cigarette, pipe, or any smokable product and includes the use of marijuana for a debilitating medical condition as provided for in Title 50, chapter 46.

"Tobacco product" means cigarettes and all other products containing tobacco that are intended for human consumption or use.


FDA Best Practices

Using an Evidence-based Approach

1. Set research questions: Based on a robust body of evidence that supports the idea that tobacco use is a public health issue, FDA conducted a review of research to develop effective strategies and messaging to reach our target audiences. These strategies include:
   - Message development, including adapting themes to meet the needs of different audiences
   - Concept development, including conducting focus groups with target audience members to identify promising concepts and consulting with experts
   - Copy testing TV ads with members of our target audience to measure perceived effectiveness, level of engagement, and message comprehension.

To comply with NIH communication guidelines, government entities and nongovernment organizations would benefit from improving the readability of e-cigarettes information and advice.

US adults have varying levels of perceptions about the harms of ENDS use versus cigarette smoking during pregnancy.


Adult participants with MHC were approximately 1.5 times more likely to have used ENDS in their lifetime and almost twice as likely to currently use ENDS as those without MHC. A bi-directional association of depressive symptoms with e-cigarette use onset across mid adolescence was observed.


Montana Recommendations

E-cigarettes are NOT an FDA-approved Quit Aid.
Currently, FDA has insufficient evidence that e-cigarettes are effective for smoking cessation.
- Seven medicines are approved by the FDA for smoking cessation, and are proven safe and effective when used as directed.

http://health.mt.gov/CommunityHealth/PreventiveHealth/PreventiveHealth/E-Cigarettes.pdf
resources

Association for the Treatment of Tobacco Use and Dependence
http://www.attud.org/

Fifty State E-cigarette Regulations

Public Health Law Center
http://www.publichealthlawcenter.org/resources/us-e-cigarette-regulations-50-state-review

American Lung Association

Montana position on E-Cigs

We Card Montana
http://www.wecard.org/montana

Health Equity in Tobacco Control and Prevention
http://www.ehj.org/tobacco/health-equity.pdf

E-cigs on Hospital campuses
http://www.ehj.org/tobacco/hospital/campaigns/articles/PA6474558/

resources

“As new regulatory policies are developed, we must not allow E-cigarettes to reverse our progress in reducing tobacco smoking, the leading cause of preventable death in the United States.” — Liberman, Joshua, and Samuel Wann. “E-Cigarettes—What a Practicing Cardiologist Needs to Know.” (2016).

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