

Update on Hookah and E-cigarettes



Presented By: Mary Martinasek, PhD, RRT

Outline

- Background
- Function and usage
- Concerns
- Prevalence
- Lure
- Effects and research
- E-cigarette device
- Prevalence
- Concerns
- FDA

2

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3

Hookah Smoking

- Centuries old tradition





**Egypt or
Saudi
Arabia**

“Shisha, Boory or Goza”



Africa

“Hookah”



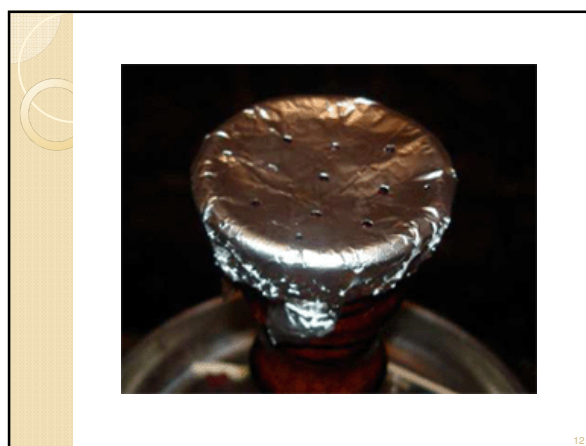
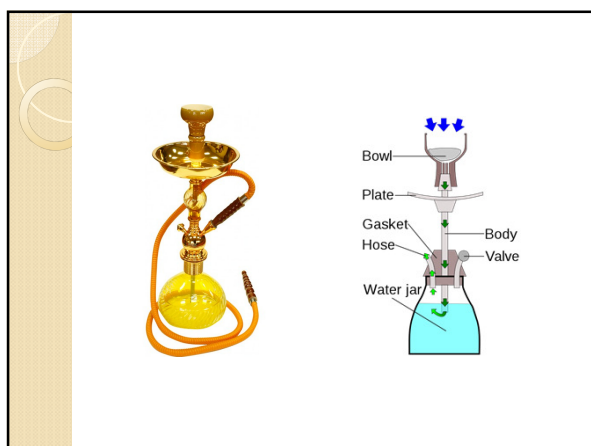
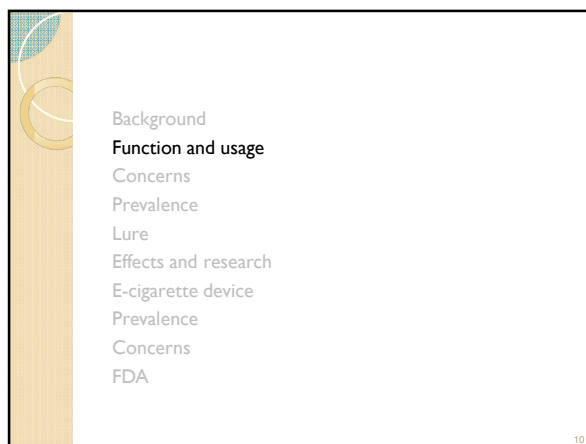
**Israel,
Jordan or
Lebanon**

“Narghile or Arghile”



Persia

“Quylan”





13

Waterpipe Tobacco

- **Maassel** – flavored tobacco
- Shisha



Shisha Packaging



Single-hose and Double-hose Hookah Pipes



Triple-hose Hookah Pipe

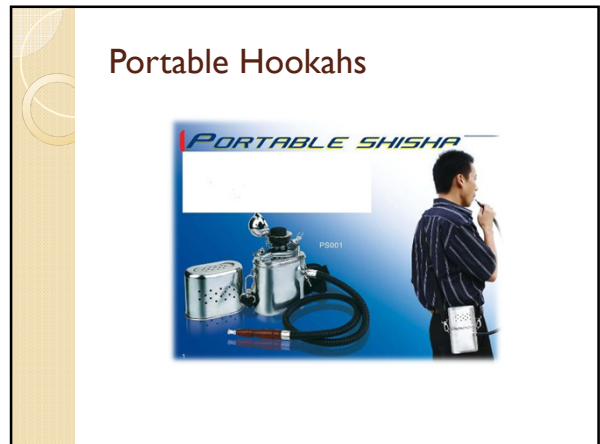


Multiple-hose Hookah Pipe



Portable Hookah Pipe







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Concerns
FDA

Hookah as a Gateway



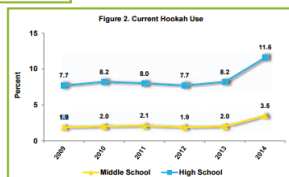
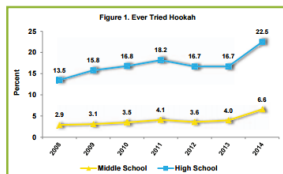
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Concerns

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Prevalence
Concerns
FDA

30

Youth in Florida



Waterpipe Characteristics

- Ever smoker and ethnicity
 - White students are 8.2 times more likely than Black students
 - Asian/Pacific Islander students are 5.1 times more likely than Black students

Social Utility



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34

Positive Outcome Expectancies



Relieves stress and boredom



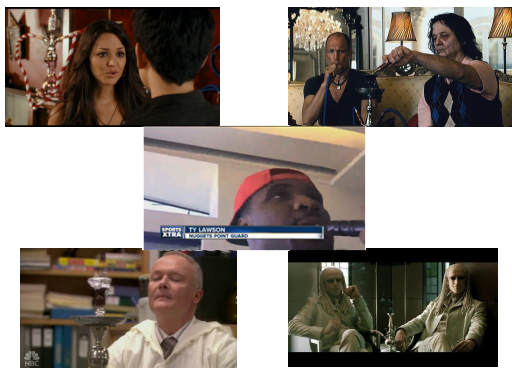
Ease of access/low cost



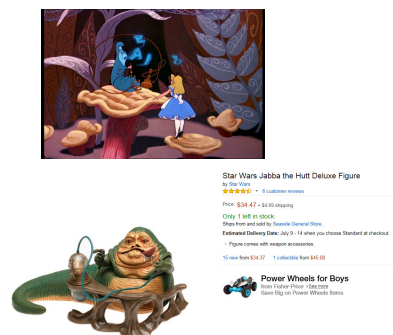
Internet Advertising Study

- 144 websites
 - Of these:
 - 79% served food
 - 41% served alcohol
 - None required age verification
 - <1% included a tobacco warning
 - 4% had a warning on a subsequent page

Media Portrayal



Special Appearances



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Concerns
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41

Why are we concerned about water pipe smoking?



What's in a cigarette?

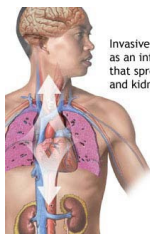
- 40 substances that cause cancer
- Arsenic (*cold, clammy*)
- Radioactive polonium
- Arsenic (*not poison*)
- Formaldehyde (*caused to make him dead people*)
- Nicotine (*not poison*)
- Tar (*not sticky stuff*)
- Carbon monoxide (*our exhaust fumes*)
- Lead (*found in heroin and some paint*)

A person may contract pulmonary tuberculosis from inhaling infected droplets from a cough or sneeze by an infected person.

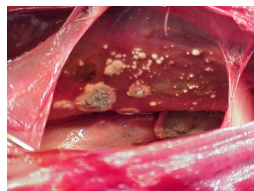
Granuloma in lung tissue

NICOTINE

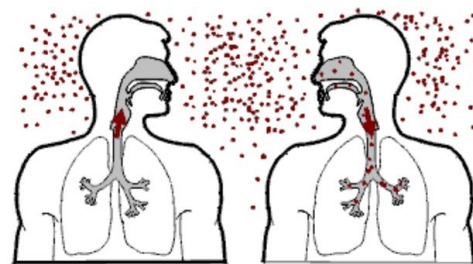
Aspergillosis



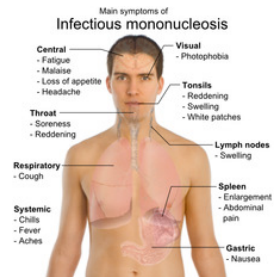
Invasive aspergillosis can occur as an infection with pneumonia that spreads to heart, lungs, brain and kidneys via the bloodstream



TB Transmission



Mononucleosis



Lip Carcinoma



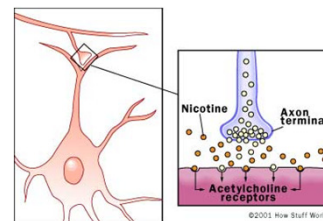
What we do know about hookah smoke?

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



Blood Nicotine Levels

- Similar to a person who smokes ten cigarettes per day



Regulatory Concerns

- FDA has been given regulatory over tobacco products, defined as “any product made or derived from tobacco that is intended for human consumption, including any component, part, or accessory of a tobacco product.”

Sampling vs. Smoking Debate

According to the Tobacco Public Policy Center (2007): “hookah bars may claim to be exempt from clean indoor air ordinances for various reasons” including:

1. Retail tobacco shop exemption
2. Private club exemption
3. Self-employed/ family owned and operated exemption
4. Claim that definitions within the specific legislation does not include hookah

Public Health Concerns

- Regulation of sanitation
- Package warnings
- Inclusion in smoking bans
- Inclusion in FDA controls
- Health education messages
- More research



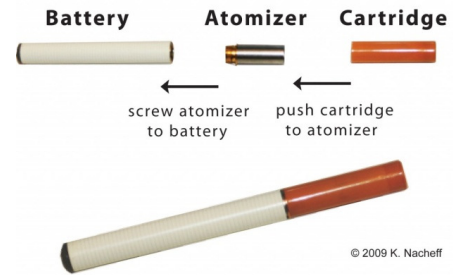
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Background
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E-CIGARETTES ENDS (ELECTRONIC NICOTINE DELIVERY SYSTEMS)



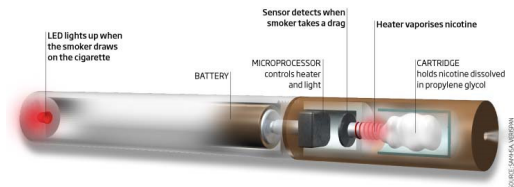
E-Cigarette






Inside the E-Cigarette

Smoke without fire

Suck on an e-cigarette and it produces a cloud of nicotine-carrying vapour with none of the toxic by-products of burning tobacco



Types

- Cigalikes 
- Advanced personal vaporizers (APV)
 - AKA eGos 
- Mods 

The Charger



Philip Morris' brand



58

RJ Reynold's brand



59

Lorillard's brand



60

Business is soaring..

- By January 2014 there were 466 brands (each with its own Internet site)
- 7764 unique flavors



Zhu, et al., 2014 Tobacco Control

61

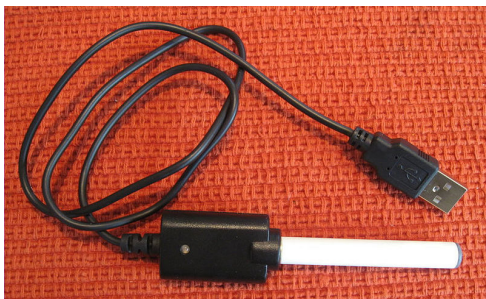


American Heritage Names Tobacco Education & Cessation Crusader Rick Bender to Advisory Board

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62

Other Chargers

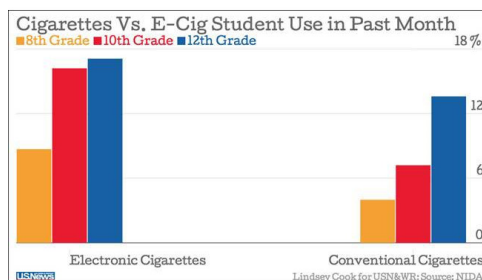
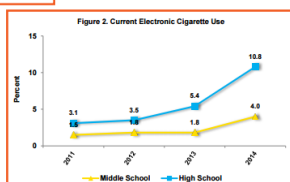
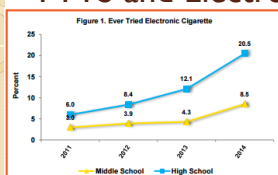


Outline

Background
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Prevalence
Concerns
FDA

64

FYTS and Electronic Cigarettes



66

Why the increase in usage?

- Youth access
- Aggressive marketing
- Low price
 - Daily users report spending \$33 vs. \$175/month
- Widespread availability



67

Outline

Background
 Function and usage
 Concerns
 Prevalence
 Lure
 Effects and research
 E-cigarette device
 Prevalence
 Concerns
 FDA

68

Research

- Nitrosamines (cancer causing agent)
- Varying amounts of nicotine
- Particulate matter
- Irritability in throat
- Cartridge labeled as 0% nicotine contained nicotine



69

Physiological Effects (n=12-32)

- Mouth and throat irritation and dry cough at initial use
- No change in heart rate, carbon monoxide (CO) level, or plasma nicotine level
- Increase in respiratory impedance and respiratory flow resistance similar to cigarette use
- No change in lung function
- No change in cardiac function as measured with echocardiogram
- No increase in inflammatory markers

Callahan-Lyon P. Electronic Cigarettes: Human Health effects. *Tob Control* 2014;23:i36-i40. doi:10.1136

70

Studies showing some positive results of e-cigarettes for quit attempts

UK study – cross sectional household survey

- N=5863
- E-cig users more likely to report abstinence (OR= 2.23) compared to no aid (OR=1.38)

Question: abstinence measured to date of survey so could have been 1 day or 6 months – no measures provided

Jamie Brown, Emma Beard, Daniel Kotz, Susan Michie, Robert West. Real-world effectiveness of e-cigarettes when used to aid smoking cessation: a cross-sectional population study. *Addiction*, 2014

71

Smokers who used e-cigarettes reported that e-cigarettes were helpful in smoking cessation and had used e-cigarettes to quit smoking.

Ester JF. Electronic cigarettes: a survey of users. *BMC Public Health* 2010;10:231.

Ester JF, Bullen C. Electronic cigarette: users profile, utilization satisfaction and perceived efficacy. *Addiction* 2011;106(11):2017–28.

Adkison SE, O'Connor RJ, Bansal-Travers M, et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *Am J Prev Med* 2013;44(3):207–15.

72

Studies showing no difference in quit attempts with e-cigarettes

- 657 people were randomized
 - 289 to nicotine e-cigarettes
 - 295 to patches
 - 73 to placebo e-cigarettes
- At 6 months, verified abstinence was
 - 7 • 3% (21 of 289) with nicotine e-cigarettes,
 - 5 • 8% (17 of 295) with patches
 - 4 • 1% (three of 73) with placebo e-cigarettes

we had insufficient statistical power to conclude superiority of nicotine e-cigarettes to patches or to placebo e-cigarettes.

Bullen, Christopher, et al. "Electronic cigarettes for smoking cessation: a randomised controlled trial." *The Lancet* 382.9905 (2013): 1629-1637.

73

Ever using e-cigarette is not associated with intention to quit, quit attempt, and smoking cessation.

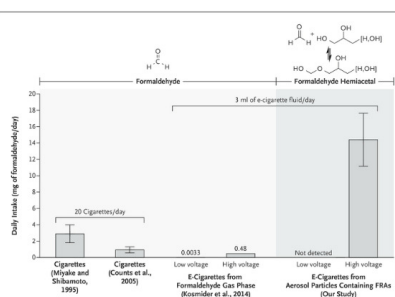
Adkison SE, O'Connor RJ, Bansal-Travers M, et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *Am J Prev Med* 2013;44(3):207-15.

Popova L, Ling PM. Alternative tobacco product use and smoking cessation: a national study. *Am J Public Health* 2013;103(5):923-30.

Caponnetto P, Campagna D, Cibella F, et al. Efficacy and Safety of an electronic cigarette (ECLAT) as tobacco cigarettes substitute: a prospective 12-month randomized control design study. *PLoS One* 2013;8(6):e66317.

74

Formaldehyde



75

Air quality study

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

During the vaping sessions substantial amounts of 1,2-propanediol, glycerine and nicotine were found in the gas-phase, as well as high concentrations of $PM_{2.5}$ (mean $197 \mu g/m^3$). The concentration of putative carcinogenic PAH in indoor air increased by 20% to $147 ng/m^3$, and aluminum showed a 2.4-fold increase. PNC ranged from 48,620 to 88,386 particles/cm³ (median), with peaks at diameters 24–36 nm. FehO increased in 7 of 9 individuals. The nicotine content of the liquids varied and was 1.2-fold higher than claimed by the manufacturer.

Schober, Wolfgang, et al. "Use of electronic cigarettes (e-cigarettes) impairs indoor air quality and increases FeNO levels of e-cigarette consumers." *International journal of hygiene and environmental health* (2013).

76

Research summary

- Nitrosamines (cancer causing agent)
- Varying amounts of nicotine
- Particulate matter
- Metals(Tin, Iron, Nickel and chromium)
- Irritability in throat
- Cartridge labeled as 0% nicotine contained nicotine
- Contaminants



77

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Background
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78

Regulation

- 2011 Court decision
 - Denied FDA regulation of E-cigarettes as drug/device
 - Approved FDA regulation of E-cigarettes as a tobacco product

79

E-Cigarette 'May Have Caused Hospital Fire' That Left Woman Badly Burned

An e-cigarette may have been responsible for igniting a hospital patient's oxygen supply and causing her life-threatening burns, it has been reported.

Jean Booth's scalp and face were severely burnt and she was last night fighting for life as an investigation tried to discover whether an e-cigarette found near her at Wythenshawe Hospital in Manchester was responsible for the blaze, [The Sun \(E\) reported.](#)



80

AAP Statement on Legislation to Require Child-Proof Packaging for Liquid Nicotine

7/10/2014 by: James M. Perrin, MD, FAAP, president, American Academy of Pediatrics

"The American Academy of Pediatrics (AAP) supports legislation introduced today by Senator Bill Nelson (D-Fla.) and several of his colleagues that would help protect our children from the dangers posed by the highly toxic liquid nicotine used to refill e-cigarettes. Children are being poisoned by these products at an alarming rate, and the Academy endorses the Child Nicotine Poisoning Prevention Act of 2014 as a needed step forward to prevent future child nicotine poisoning."

81

Current state laws

- 28 states' laws regulate e-cigarettes
 - Youth access
 - Smoke-free areas
 - Excise taxation
 - Minnesota

Arkansas and Virginia explicitly excluded e-cigarettes from their laws

82

Take home points

- Not merely water vapor
- No quality control – mainly produced in China
- Not enough evidence to support it as a cessation aid
- When heated and vaporized, propylene glycol can form propylene oxide, {International Agency for Research on Cancer class 2B carcinogen}
- Glycerol forms acrolein, which can cause upper respiratory tract irritation
- Like any poison keep bottles away from small children
- None of the exposure studies have taken into consideration chronic respiratory disease

83

PRESENTER INFORMATION

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