

Adolescents and Tobacco – 2019

Who is winning?

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Tobacco and Secondhand Smoke



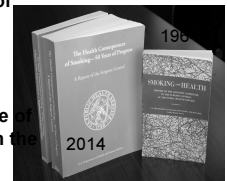
- ~ 1.1 billion people smoke
80% are in low/middle-income countries
- ~ 6 million deaths / year
- entirely preventable
- 10% of deaths are due to second hand smoke
- 25% of those are among children <5

Harms from Tobacco - Since 1604

- “Loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lung...”
 - King James I of England - 1604
- 1655 – Royal Society of London experiment – gave a cat distilled oil of tobacco – the cat died
- 1964 – US Surgeon General report on the health effects of tobacco use
- 1998 – WHO (OMS) Tobacco Free Initiative

US Surgeon General 2014 50th Anniversary report

- Over 20 million Americans died of smoking, including
 - 2.5 million nonsmokers
 - >100,000 children
- Smoking is still the leading cause of preventable disease and death in the US (and elsewhere)
- The epidemic is sustained by the tobacco industry, which deliberately misleads the public about the risks of smoking

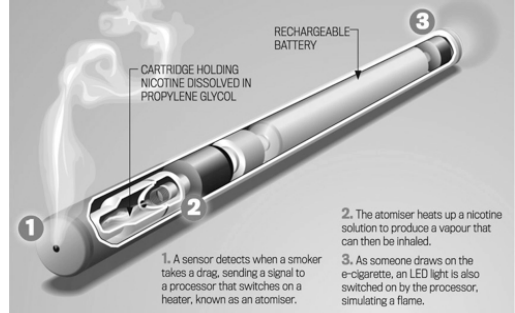


What We've Learned in 50 Years

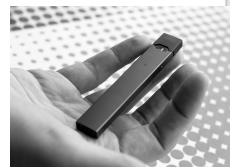
- Smoking is more deadly than 50 years ago
- Smokers inhale > 7,000 chemical compounds – 70 are carcinogens
- Secondhand smoke (SHS) kills 41,000 nonsmokers/year
- There is no safe level of smoke exposure and **NO SAFE CIGARETTE**
- There are many missed opportunities for prevention



Inside the e-cigarette



E-Cigarette E-hookah Vape Pen



Compounds in Smoke

Gases

- Carbon monoxide
- Hydrogen cyanide
- Ammonia
- Benzene
- Formaldehyde



Particles

- Nicotine
- Nitrosamines
- Lead
- Cadmium
- Polonium-210

70 proven human carcinogens

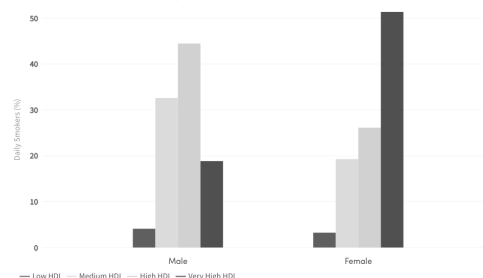
E-cigarettes – different – still unsafe

Excretion of metabolites of acrylonitrile, acrolein, propylene oxide, acrylamide, and crotonaldehyde are higher in e-cigarette-only users compared to controls

- Rubenstein et al., Pediatrics, 2018

Global Distribution of Smokers

Three quarters of male daily smokers live in countries with medium- or high-HDI, whereas half of female daily smokers live in very high-HDI countries.



Male and female daily smokers globally, age ≥10 years, 2015, by country human development index

THE TOBACCO ATLAS
tobaccoatlas.org



Proportion of children and non-smoking adults exposed to secondhand smoke

	Children (±) (%)	Men (%)	Women (%)
Africa (D)	13	7	11
Africa (E)	12	4	9
The Americas (A)	24	16	15
The Americas (B)	29	14	22
The Americas (D)	22	15	19
Eastern Mediterranean region (B)	38	24	25
Eastern Mediterranean region (D)	33	21	35
Europe (A)	51	35	32
Europe (B)	56	52	54
Europe (C)	61	66	66
Southeast Asia region (B)	53	32	56
Southeast Asia region (D)	36	23	19
Western Pacific region (A)	51	50	54
Western Pacific region (B)	67	53	51
Worldwide	40	33	35

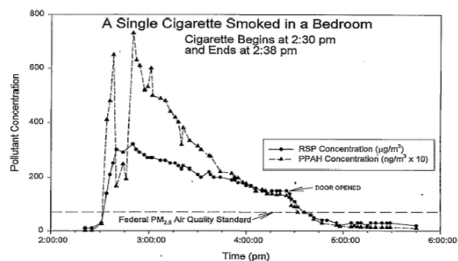
Oberg et. al. Lancet, 2010

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Effect of a Single Cigarette on Indoor Air Quality



...it takes TWO hours for the air quality to return to minimum federal safety standard for levels of CO , fine particles and particulate aromatic hydrocarbons..

Ott et al. 2003. J. Air & Waste Manage. Assoc.

MATERNAL TOBACCO USE/EXPOSURE AND PREGNANCY OUTCOMES

SHS Exposure related to:

- Low birthweight

Tobacco Use related to:

- Low birthweight
- Premature birth
- Stillbirth
- Neonatal mortality
- Abnormal bleeding during pregnancy and delivery
- Damage to child's developing brain & lungs
- Birth conditions, including cleft lip and cleft palate



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EFFECTS OF TOBACCO AND SHS ON CHILDREN

Short-term Health Effects

Respiratory tract infections
Decreased lung function
Decreased immune response
Asthma attacks
Ear infections
Tooth Decay

Long-term Health Effects

Sudden Infant Death Syndrome
Death from respiratory infection
Asthma
Cognitive, Behavioral issues
More likely to become smokers
Leukemia and lung cancers
Metabolic syndrome

Indirect Health Effects

Malnutrition, food insecurity due to money spent on tobacco
Illness/death of parents from tobacco use

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Why Do People Use Tobacco?



Artwork by Charles S. © 2013
AAP Children's Art Contest

- Nicotine is physically addictive
 - Tolerance/withdrawal symptoms
- Nicotine causes dopaminergic activation and CNS stimulation
- Use is reinforced by social cues
- Youth are more susceptible to addiction

First Puff...

- >80% of smokers start before age 18
- Nicotine in 1-2 puffs occupies 50% of nicotinic receptors in the brain
- Nicotine goes to brain 6 seconds after inhalation
- Smokers control their nicotine levels
- Media teaches children smoking is pleasurable



Electronic cigarettes

- Marketed as
 - “safe”
 - “no carcinogens”
 - “harmless water vapor”
 - “could help smokers quit”
- None of these claims are true...



E-liquid Toxicity – heating creates carcinogenic compounds

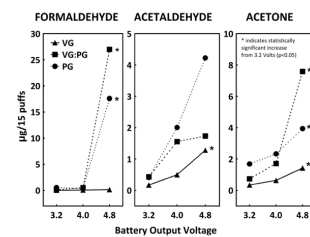


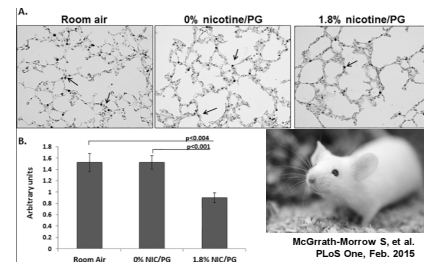
Figure 1. Effects of nicotine solvent and battery output voltage on levels of carbonyl compounds released from ECs (µg/15 puffs; N = 3; puff duration 1.8 s, puff volume 70 ml, puff intervals 17 s).

What are the health harms?

- Relative to smoked tobacco, less harmful
 - No tar
 - Variable levels of nicotine
- Relative to NO tobacco or medical NRT
 - Decreased lung function (aldehydes)
 - Long term effects - nicotine is toxic to heart/lungs
 - Safety of flavors when heated and inhaled
- Non- and former smokers become addicted
- Maintains combusted tobacco use

Impact of secondhand aerosol

Nicotine adsorbed + Alveolar growth & lung function is impaired and overall growth is affected in newborn mice exposed 2x/day for 10 days



False advertising - to profession and public

EVERYDAY MONEY HEALTH

Vaping Is 95% Healthier and 40% Cheaper Than Smoking

Oliver Wolf-Meyer, Smoosman Aug 26, 2015

The pack-a-day smoker can save around \$1,200 per year by vaping.

The CDC and various health organizations don't want to endorse smoking or nicotine consumption in any form, so it's understandable that they've emphasized first and foremost that e-cigarettes are bad for people.

According to a new study published by Public Health England on Wednesday, however, vaping is actually 95% less harmful than their smoldering counterpart.



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JUUL



- Deliver peak nicotine in 5 minutes
- Less aversive & higher nicotine per puff than other products
- 25% past month use in 15-19 year olds
- Rise in total tobacco use rates
- Many teens do not know Juul always contains nicotine

Juuling



• Ads and flavors target youth and re-normalize smoking

• Very little 'smoke'
– easy to hide

• Can be used for marijuana too

But don't e-cigarettes help in smoking cessation?

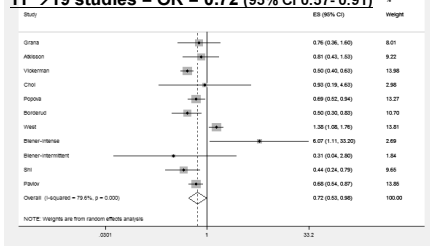
- Very limited evidence
- Most suggests that people cut down and don't stop completely...

E-cigs & smoking cessation

- UK study – first evidence - NEJM Jan '19
- Smokers assigned nicotine replacement of their choice versus e-cigarette
- Both got behavioral support
- 1 year abstinence – 18% in e cig group versus 10% in NRT group
- 80% of e-cig group using product at 1 year/versus 9% of NRT group

Meta-analyses – Glantz et al 2015; 2017

11 → 19 studies = OR = 0.72 (95% CI 0.57-0.91)



Smokers who use e-cigarettes are about 30% less likely to quit

New e-cigarette respiratory illness

- 9/17/19: 530 confirmed and probable cases of vaping-related lung injury in 38 states, 7 deaths
- > 50% are younger than 25 years
- Males > Females
- Cough, shortness of breath, chest pain, nausea, GI symptoms, fever, abdominal pain
- Many patients report use of multiple substances, including both THC and nicotine

Exploding e-cig batteries

A 17-year-old says he suffered third-degree burns to his leg when a vape pen battery exploded in his pocket.



via Fund Rsr / via gettyimages.com

The teenager's left leg was charred from his thigh to his calf, and he suffered second- and third-degree burns.



via Fund Rsr / via gettyimages.com

Monitor tobacco use and prevention policies

Protect people from tobacco smoke

Offer help to quit tobacco use

Warn about the dangers of tobacco

Enforce bans on tobacco advertising, promotion and sponsorship

Raise taxes on tobacco

Offer help to quit: Are we asking the right questions?

- 66% of adult smokers advised to quit
- Only 23% of adults asked about SHS
- 64% of parents asked about SHS
- 33% parents advised to keep homes and/or cars smoke-free



Minh-Tri V. Age 17
1st Place, AAP 2010 Art Contest

Social climate survey, 2015

Tobacco control programs must be more than cessation/quitting for adults

- Cessation counseling is effective
 - Include secondhand smoke - Ask and Advise
- Tobacco control programs
 - Include child health clinicians
- Quit-lines and other resources
 - Include motivation to protect others as a primary factor for behavior change

Raise minimum sale of tobacco to age 21

- Tobacco 21 prevents or delays initiation of tobacco use
 - 12% reduction in overall smoking prevalence
 - 10% reduction in premature deaths
- 4.2 million years of life saved in US

Projected drop in initiation rates by age	
Younger than 15	15% ↓
Ages 15-17	25% ↓
Ages 18-20	15% ↓



AAP 2018 Policy Recommendations

- Ask the right questions about tobacco including e-cigs and vapor
- Act immediately to regulate e-cigs similar to combustible sigs
- Do not recommended E-cigs for cessation
- Tax e-cigs like other tobacco products
- Ban all tobacco sales to children and youth less than age 21



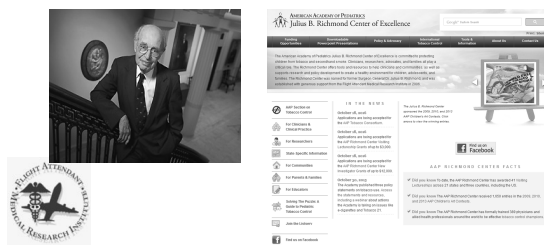
What should we do about e-cigs and other new tobacco products?

- Ban them?
- Until we know more about “e-anything” and cessation, recommend medicinal NRT, quit lines and cessation support to smokers
- Without regulation of marketing, flavoring, and promotion to youth, “debate” over possible harm reduction benefit supports the tobacco industry effort to delay effective regulation and addict youth to nicotine

Where are we in 2019?

- Strong evidence for policy and practices that would help achieve tobacco free generation and prevent related disease and deaths
- E cigs harms users and Secondhand vapor harms growing lungs
- Many missed opportunities for prevention/policy
- We cannot afford to be complacent nor to only focus on cessation of combustible products
- Policies are needed to protect non-smokers from SHS and to prevent adolescents from becoming addicted to nicotine – including e-Cigarettes

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www.richmondcenter.org



"Tobacco use is unlike other threats to global health. Infectious diseases do not employ multinational public relations firms. There are no front groups to promote the spread of cholera. Mosquitoes have no lobbyists."

— WHO Zeltner Report, 2000

