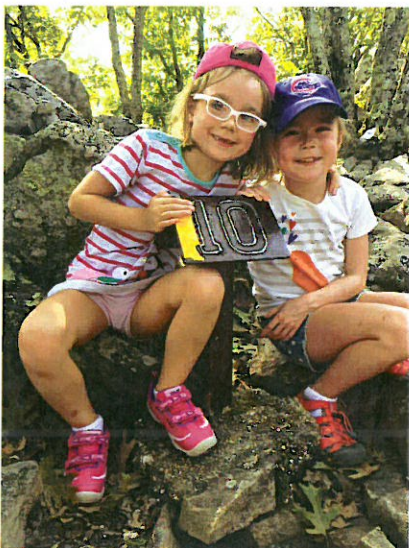


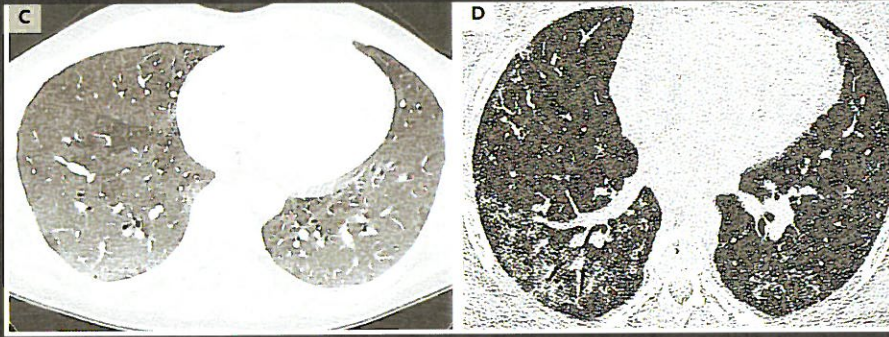
Summary

- Electronic Cigarettes may contain less carcinogens than combustible tobacco
- Some individuals can quit with e-cigarettes, but data on large groups is not conclusive
- Are there non-cancer diseases and complications that outweigh benefits?
- Short term vs long term benefits and risks
- More questions than answers

Thank you

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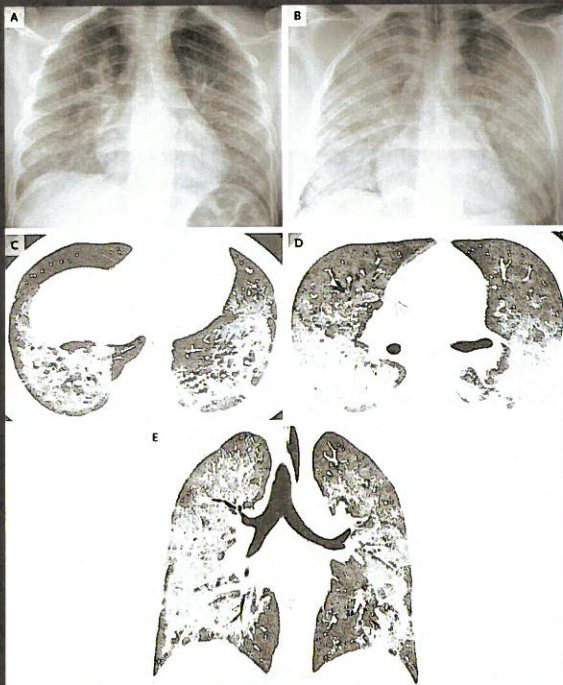
TS Henry et al. N Engl J Med 2019.
DOI: 10.1056/NEJMc1911995



THE NEW ENGLAND
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An image obtained from a 35-year-old man with a pattern of hypersensitivity pneumonitis (Panel C) shows extensive centrilobular ground-glass attenuation nodules, especially in the anterior region, and more confluent ground-glass opacity in the dependent lungs, with lobules of mosaic attenuation. The patient's symptoms improved after cessation of vaping.

An image obtained from a 49-year-old woman with giant-cell interstitial pneumonia (Panel D), which was diagnosed on the basis of findings on surgical biopsy of the lung and was attributed to cobalt in her vape pen, shows fibrosis characterized by peripheral reticulation, ground-glass opacity, and mild traction bronchiectasis. The patient's symptoms improved after cessation of vaping.



Chest Radiographs and High-Resolution Computed Tomographic Imaging in a 17-Year-Old Male Patient with Diffuse Lung Disease.

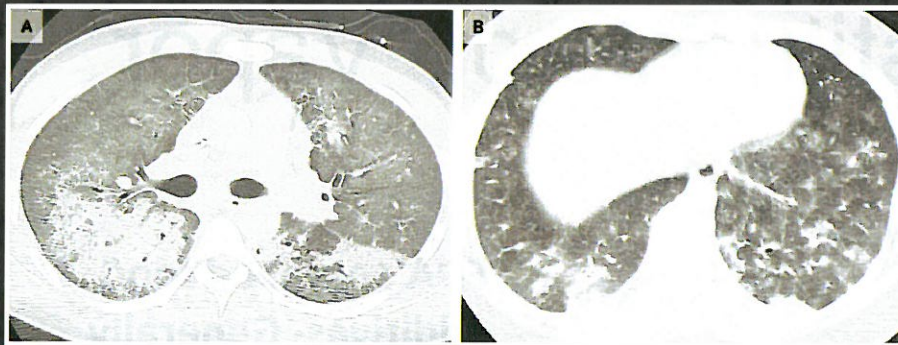
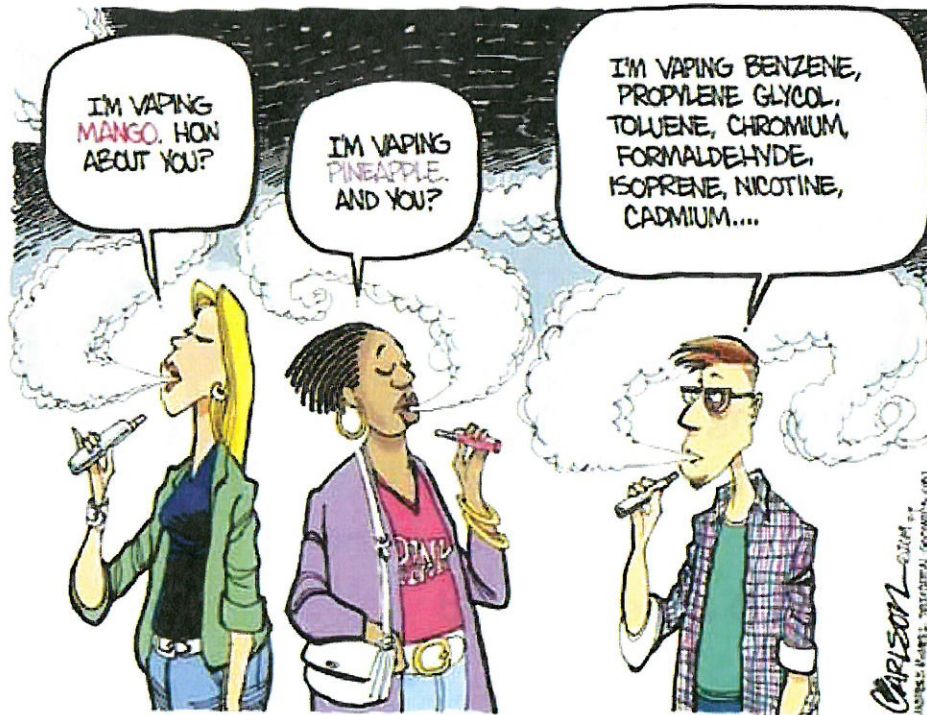
In the initial radiograph of the chest at admission (Panel A), the image shows hazy opacities that are predominant in the mid and lower lungs. An anterior–posterior radiograph of the chest that was obtained approximately 12 hours after presentation (Panel B) shows rapid worsening of diffuse lung opacities with developing consolidation and air bronchograms.

Axial (Panels C and D, showing different segments of the lung in order to visualize the extent of the opacities) and coronal reformatted (Panel E) high-resolution CT images of the chest show ground-glass opacities in both lungs and dense consolidation in a peribronchial and perilobular distribution, with relative subpleural sparing — findings consistent with an organizing pneumonia pattern of lung injury.



"It's just nicotine and water vapor... Right?"

- Less carcinogens than cigarettes
- Less = safe?
- Other issues besides cancer?



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DOI: 10.1056/NEJMc1911995



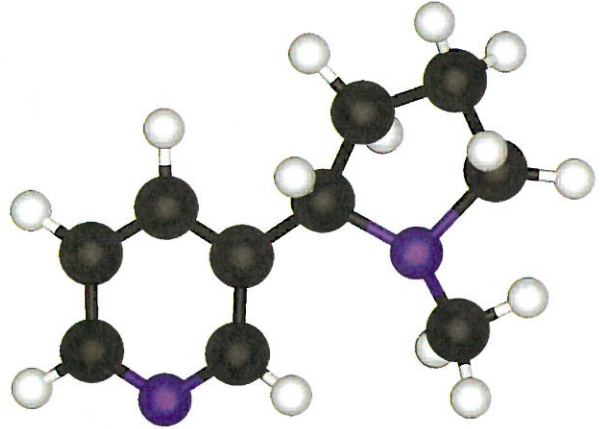
THE NEW ENGLAND
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An image obtained from a 20-year-old man with diffuse alveolar damage (Panel A) shows dependent consolidation and diffuse ground-glass opacity, with some areas of bronchial dilatation typical of diffuse alveolar damage. The patient underwent intubation on hospital day 2 but eventually recovered after receiving glucocorticoid therapy.

An image obtained from a 19-year-old woman with acute eosinophilic pneumonia (Panel B) shows diffuse nodular areas of consolidation and ground-glass opacity, with mild septal thickening and a small right pleural effusion. The findings cleared within days after the administration of glucocorticoids. An image obtained from a 35-year-old man with a pattern of hypersensitivity pneumonitis

"It's just nicotine and water vapor... Right?"

- Nicotine (0% to 3% or more)
- Propylene Glycol
- Glycerin
- Polyethylene Glycol
- Water
- Flavoring
- Anti-irritants
- HEATED & Aerosolized



Constituents of "Vapor"

- Nicotine (0% to 3% or more)
- Propylene Glycol
- Glycerin
- Polyethylene Glycol
- Water
- Flavoring
- Anti-irritants
- HEATED & Aerosolized
- FDA approved food additives- Generally Recognized As Safe
- FOOD Additives
- Are those safe in the lungs?
- What happens to the liquids when heated?

ENDS for cessation

- Hajek et al. NEJM 2019:
- 886 people who smoked in NHS smoking cessation clinics (in UK)
- Randomized to Nicotine Replacement of choice [patch, gum, lozenge] (12 weeks) or ENDS (1.8% nicotine); and, encouraged to continue use) with behavioral support

RESULTS

A total of 886 participants underwent randomization. The 1-year abstinence rate was 18.0% in the e-cigarette group, as compared with 9.9% in the nicotine-replacement group (relative risk, 1.83; 95% confidence interval [CI], 1.30 to 2.58; $P < 0.001$). Among participants with 1-year abstinence, those in the e-cigarette group were more likely than those in the nicotine-replacement group to use their assigned product at 52 weeks (80% [63 of 79 participants] vs. 9% [4 of 44 participants]). Overall, throat or mouth

NIH funding

E-cigarettes and smoking cessation in real-world and clinical settings: a systematic review and meta-analysis

Sara Kalkhoran, Stanton A Glantz

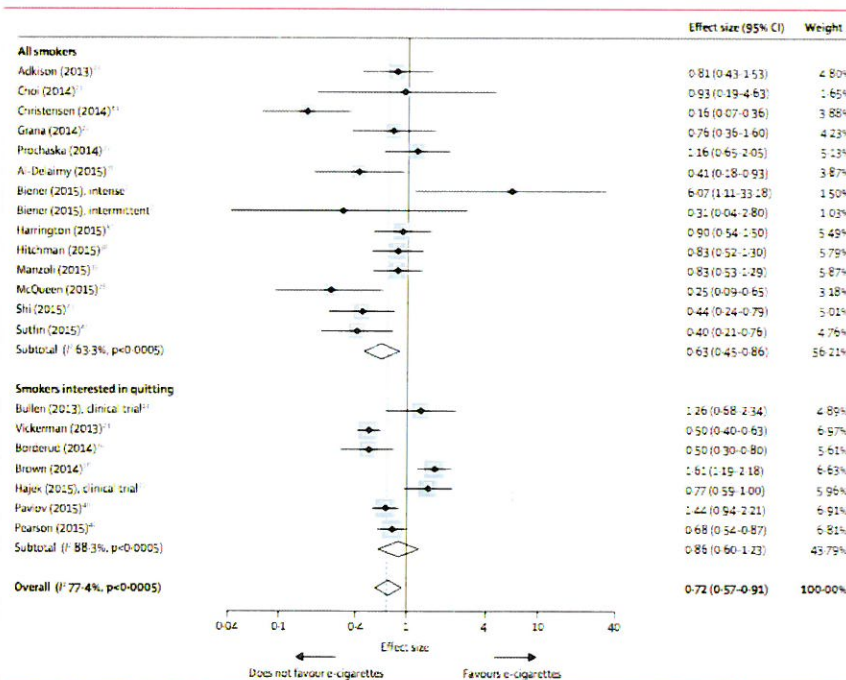


Figure 3: Odds of quitting smoking, stratified by all smokers versus those with an interest in quitting. Figure shows odds of quitting among e-cigarette users compared with non-e-cigarette users. The overall odds of quitting cigarettes is 0.72 (95% CI 0.57-0.91) irrespective of how studies are stratified.

- 38 studies included in analysis
- Endpoint was cessation
- Overall EC associated with 28% reduction in quitting
- Use in real-world, not in a randomized clinical trial setting.

Electronic Cigarettes



- Multiple different types of devices

Source: images courtesy of FDA CTP

Terminology

- Electronic Cigarettes
- E-Cigarette
- Vape
- ENDS (Electronic Nicotine Delivery Systems)
- etc

Background

- Thoracic surgeon, areas of clinical focus include lung cancer, and other pulmonary diseases.
- Faculty at UAMS (2009-present), also practicing at Baptist Health (2017-present)
- Certified Tobacco Treatment Specialist training Mayo Clinic
- Physician lead for tobacco cessation program at UAMS WPRCI
- Research focus is smoking cessation programs integrated into cancer care (presented to FDA and internationally)
- Member of Arkansas Tobacco Prevention Cessation Program advisory committee

Electronic Cigarettes



No single 'expert' at every aspect:

Public health, toxicology, addiction / behavioral science, pulmonary diseases, etc.

Will share some perspectives as a physician

Electronic Cigarettes

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for:

Senate Committee on Public Health, Welfare, and Labor
House Committee on Public Health, Welfare, and Labor
Wednesday September 18, 2019, 10:15 AM

Disclosures

- No financial conflicts of interest
- Many different roles:
 - physician
 - dad
 - educator
 - concerned citizen
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