



ST VINCENT'S  
HEALTH AUSTRALIA

# Vaping - let's keep talking

GVH Echo – Nov 2022

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**E-CIGARETTES**  
GET THE FACTS

**E-CIGARETTES CAN BE HARMFUL**  
They contain chemicals and toxins that can cause serious health issues.

**E-CIGARETTES ARE NOT PROVEN SAFE AND EFFECTIVE CESSATION AIDS**  
There are other proven safe and effective options to help smokers quit.

People are **MORE LIKELY TO TAKE UP TOBACCO SMOKING** if they use e-cigarettes.

[www.nhmrc.gov.au/ecigs](http://www.nhmrc.gov.au/ecigs)

Australian Government  
National Health and Medical Research Council

The infographic features a yellow background on the left and a dark grey background on the right. It includes icons for a skull and crossbones, laboratory flasks, a warning sign, a cigarette, and cessation aids like a smartphone and a nicotine patch.



## Vaping is 95% less harmful than smoking

2014

### NUTT AND COLLEAGUES

An expert group led by Professor David Nutt estimated vaping carried only 4% of the harm of cigarette smoking

2015

### PUBLIC HEALTH ENGLAND

"E-cigarettes are 95% less harmful to your health than normal cigarettes" based on a comprehensive review of the scientific evidence in 2015 and again in 2018

2016

### UK ROYAL COLLEGE OF PHYSICIANS

A detailed independent review concluded health risks "are unlikely to exceed 5% of those associated with smoked tobacco products, and may well be substantially lower"

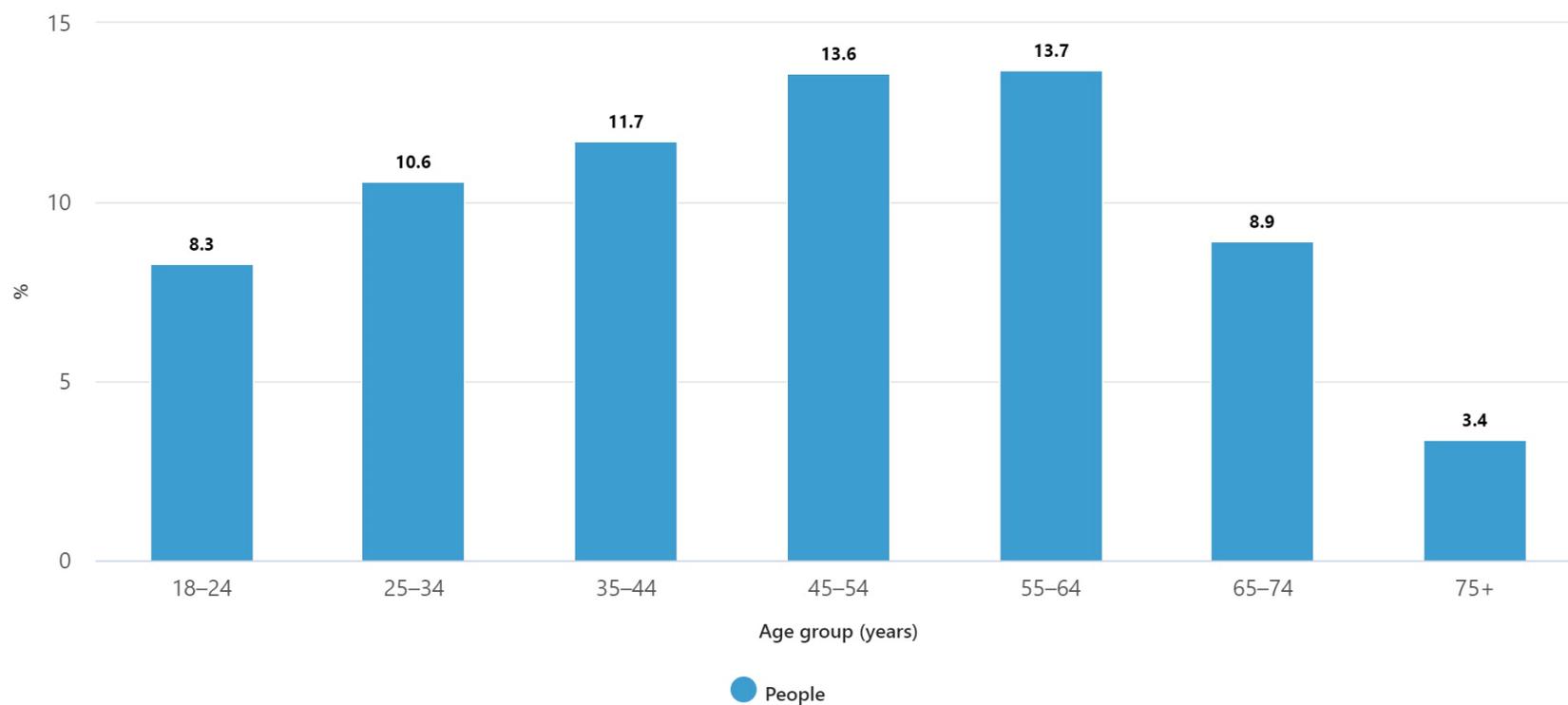
2018

### NASEM

The US National Academies of Sciences, Engineering and Medicine: "while e-cigarettes are not without risks, they are likely to be far less harmful than conventional cigarettes"

# Australia: National Health Survey

Proportion of current daily smokers by age, 2020-21



Source: Australian Bureau of Statistics, Smoking 2020-21 financial year

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In 2020-21, current daily smokers aged 18 years and over had higher rates of the following long-term health conditions compared to those who had never smoked:

One in three (32.0%) had a mental and/or behavioural diagnosis

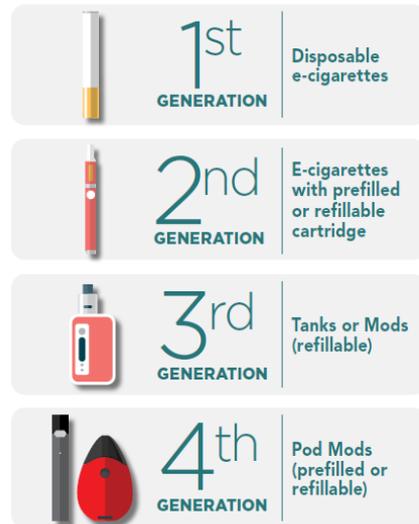
One in four (26.2%) had back problems

One in seven (14.8%) had asthma

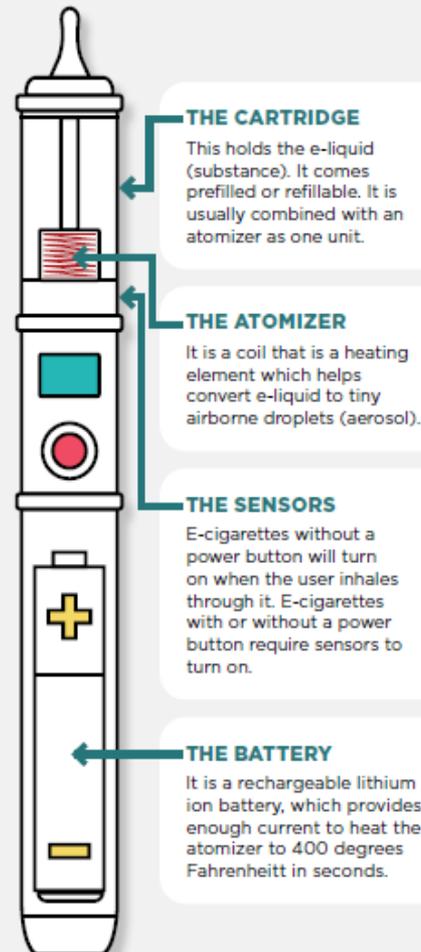
# cigg/day approx. 10 but increased with age

# US CDC E-cigarette, or Vaping, products visual dictionary

## The Evolution of E-Cigarette, or Vaping, Products



## THE E-CIGARETTE



**Mod Box**  
It is a 3rd generation device that is modifiable ("Mod") allowing users to change the voltage, coils and wicks.



**Sub-Ohm Tank**  
It is made of plastic or metal with transparent casing so liquid levels can be seen. It contains a lower resistance coil that allows the liquid to heat up faster.



**Cartridge**  
It is made of plastic or metal with transparent casing so liquid levels can be seen. It contains an atomizer that heats up the e-liquid.

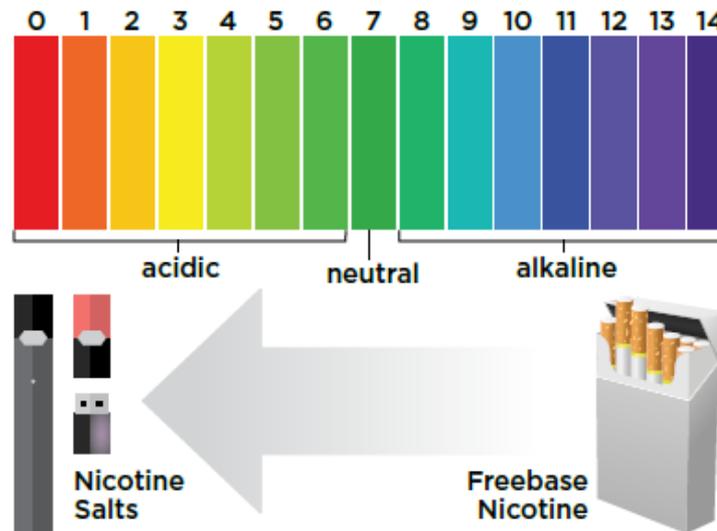


**E-Liquid**  
E-liquid is contained in a pod, cartridge or tank. It is made up of a mixture of substances that includes nicotine, cannabis, and/or flavoring.

# Evolving Quickly



# Evolving Quickly

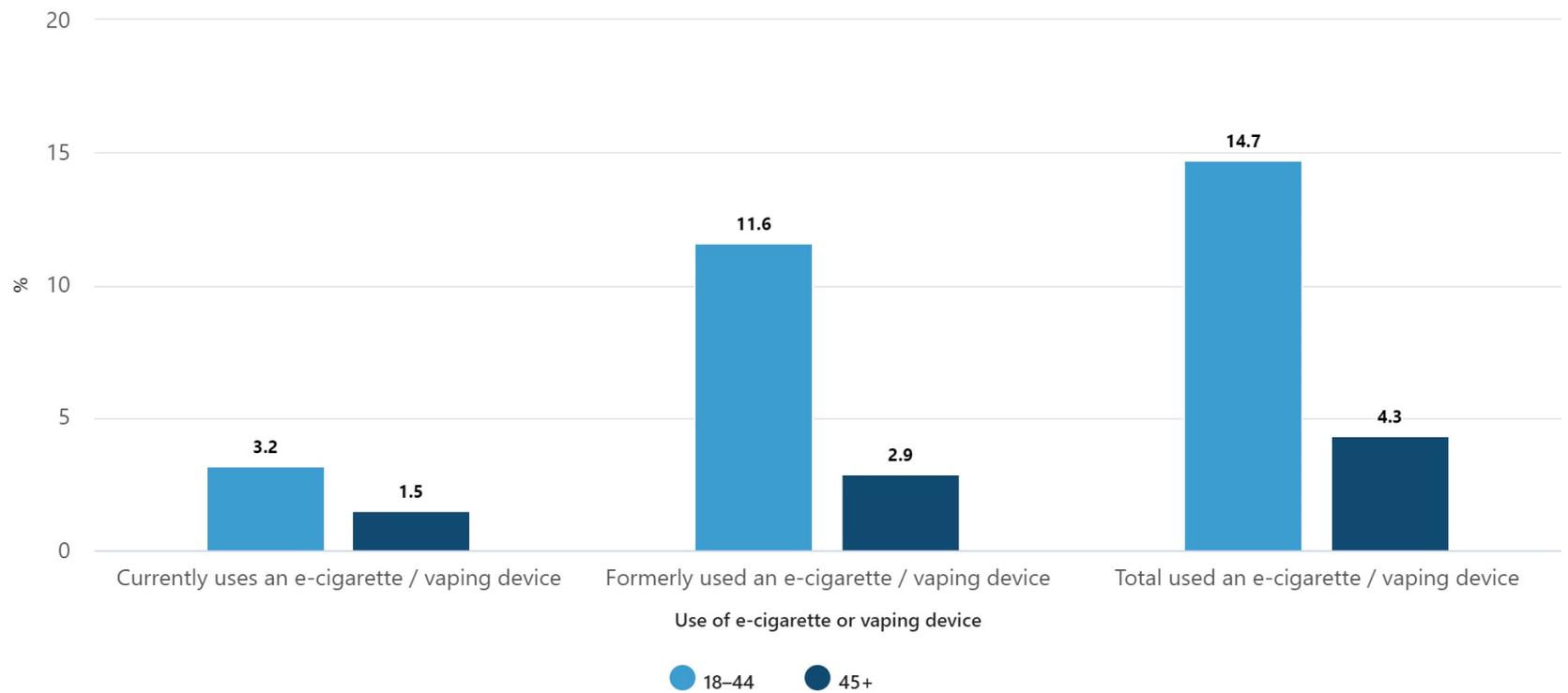


For accessibility, explanation of graphic can be found in [Appendix page 25](#).

## Pod Mods

- Pod Mods typically use nicotine salts rather than the freebase nicotine used in most other e-cigarette, or vaping, products.
- Nicotine salts, which have a lower pH than free base nicotine, allow particularly high levels of nicotine to be inhaled more easily and with less irritation to the throat than freebase nicotine.

Proportion of people who used an e-cigarette or vaping device by age, 2020-21



Source: Australian Bureau of Statistics, Smoking 2020-21 financial year

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## Age > 18

- Men > women (2.9% vs 1.6%)
- More common in 18-24 (4.8%) than older age groups

## Of smokers

- 8.9% currently use an e-cigg and 23.8% have formerly used

## US data

- US 3.7% current use adults, 11.3% high school students used in last 30 days
- Current ecigg users 36.9% currently smoke combustible tobacco, 39.5% ex-smokers, 23.6% never combustible tobacco smokers
- 56% of ecigg users aged 18-24 never smoked combustible tobacco

# Are the UK different?

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## **3.8% daily use e-cigarettes (further 2.6% occasional)**

- **8.6% of 25-34 year olds**
- **Vaping prevalence 20.1 % current smokers, 11% former smokers, 0.3-0.6% among never smokers**
- **4.8% youth vaping rate (unchanged 2019-2020)**
- **0.8-1.3% of youth never smokers were current vapers**

**Among long term former smokers, more vaping, less NRT**

**50.6% report vaping as an aid to stopping smoking**

# Contrasting e-cigarette regulatory environments

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## UK

- **No medicine licensing**
- **Regulated as consumer products (Tobacco and related products) – age > 18, advertising restrictions, limits on nicotine concentration (20mg/ml) and size of refill containers, health warnings/information, quality standards, taxation (20% VAT – much less than tobacco, more than NRT) reporting of Aes**
- **Pros – widespread use for quit attempts, differential appeal, minimised unintended consequences**
- **Cons – no health professionals, health claims prohibited, lack of enforcement resources**

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## NZ

-prior to regulation; 'free for all ' – daily vaping 5-15 year olds 15% (advertising +++)  
(population in NZ that is vaping is overwhelmingly skewed young)

### New legislation

- full range of flavours available at specialist retailers
- any retailer mint/menthol/tobacco flavours
- No sales < 18, safety standards, nicotine content < 20mg/ml, packaging warnings
- All advertising/sponsorship is banned except for within specialist retailers
- Can't vape where can't smoke
- Vaping facts website and youth campaign

Pros – similar balance

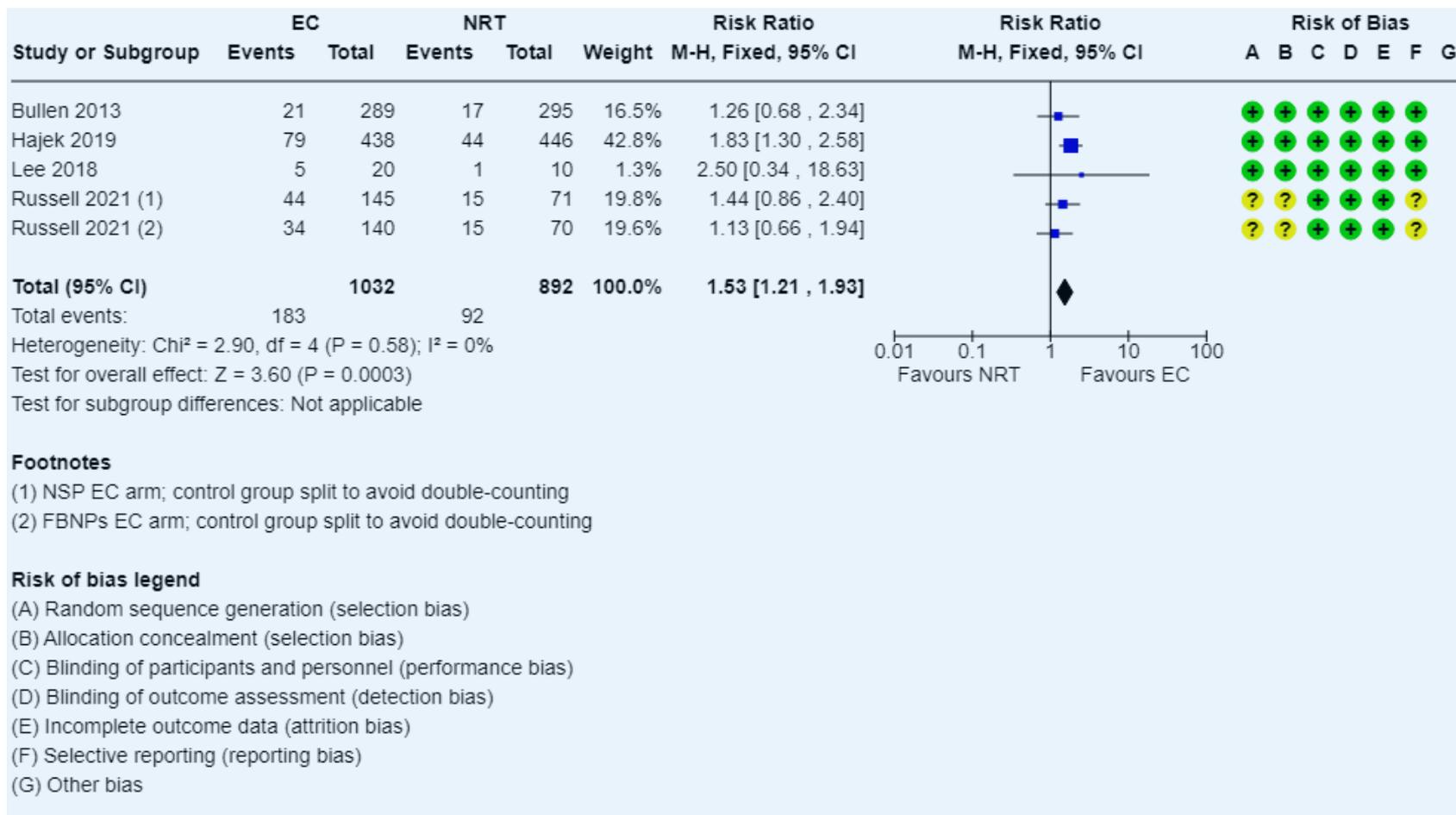
May make more aggressive anti-tobacco regulation possible

# Australia Legal Status

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- **Vaping with or without nicotine covered by tobacco product legislation (i.e everything that pertains to tobacco pertains to non-nicotine vapes – age, therapeutic claims, marketing etc...)**
- **Nicotine containing are S4 products but none on ARTG so pathways for unapproved therapeutic use**
- **Product standard TGO 110 (child resistant closures, warning labels, max concentration 2%) – overseas supplier, script available, 3 months supply at a time. SAS authorised prescriber streamlined. (Sale of nicotine e-cigarettes and liquid nicotine illegal without a doctors prescription)**
- **Most e-cigarettes contain nicotine (easy access +++)**
- **Not allowed to vape anywhere where you can not have combustible tobacco (except in WA)**
- **Described as a grudging tolerance; hard to match product and supply, liability re: unapproved medicine**
- **Restriction to smokers vs poor enforcement**

# Cochrane Sep 2021 – Electronic Cigarettes for Smoking Cessation



# Conclusions

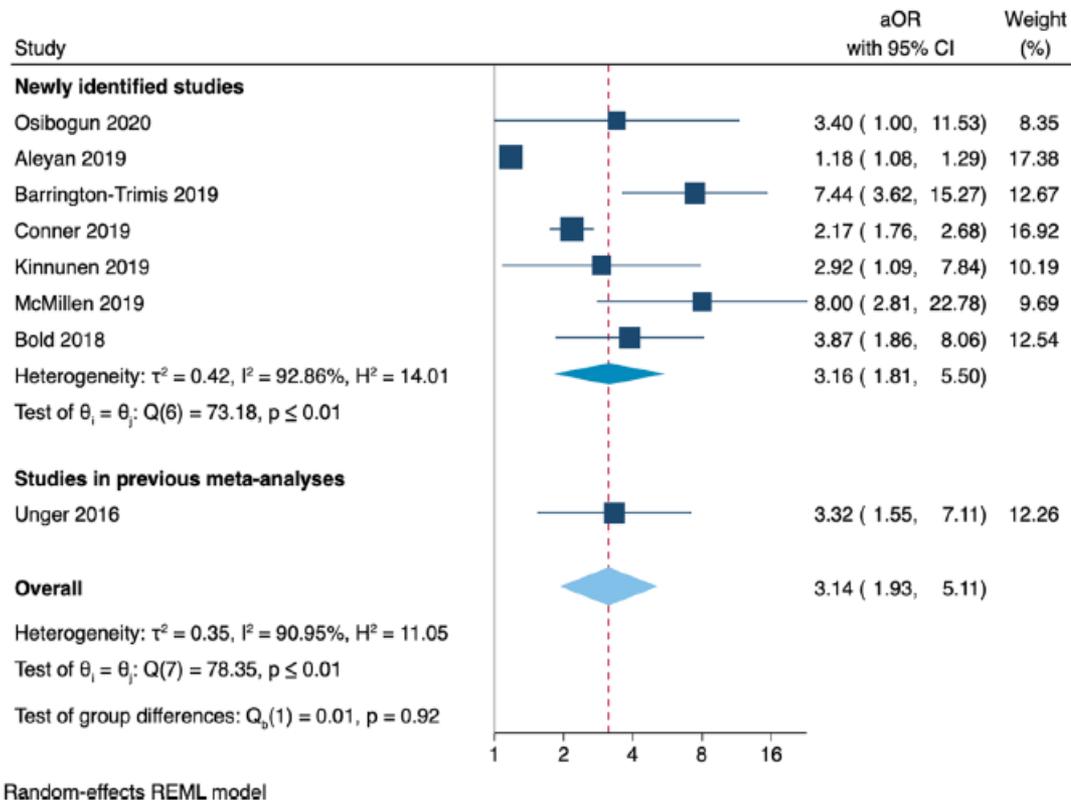
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- **approximately extra 3 quitters per 100 (95% CI 1 - 6) compared with NRT to six months**
- **similar AEs rate (low precision)**
- **Better results when compared to either non-nicotine eciggs or behavioural supports alone (6-7 extra quitters/100)**
- **Confidence intervals were wide**
- **No trials of nicotine salts**

## However

- **people are unlikely to stop using electronic cigarettes (c/w NRT)**
- **in smokers randomised to ENDS; dual use was more likely than quitting**
- **high, effective delivery of nicotine makes them attractive**

# Vaping to Combustible Tobacco



**Figure 3** Forest plot and random-effects meta-analysis for the adjusted odds of current (past 30-day) smoking at follow-up among non-current smokers and current e-cigarette users at baseline compared with non-current e-cigarette users at baseline. aOR, adjusted OR; REML, Restricted Maximum Likelihood

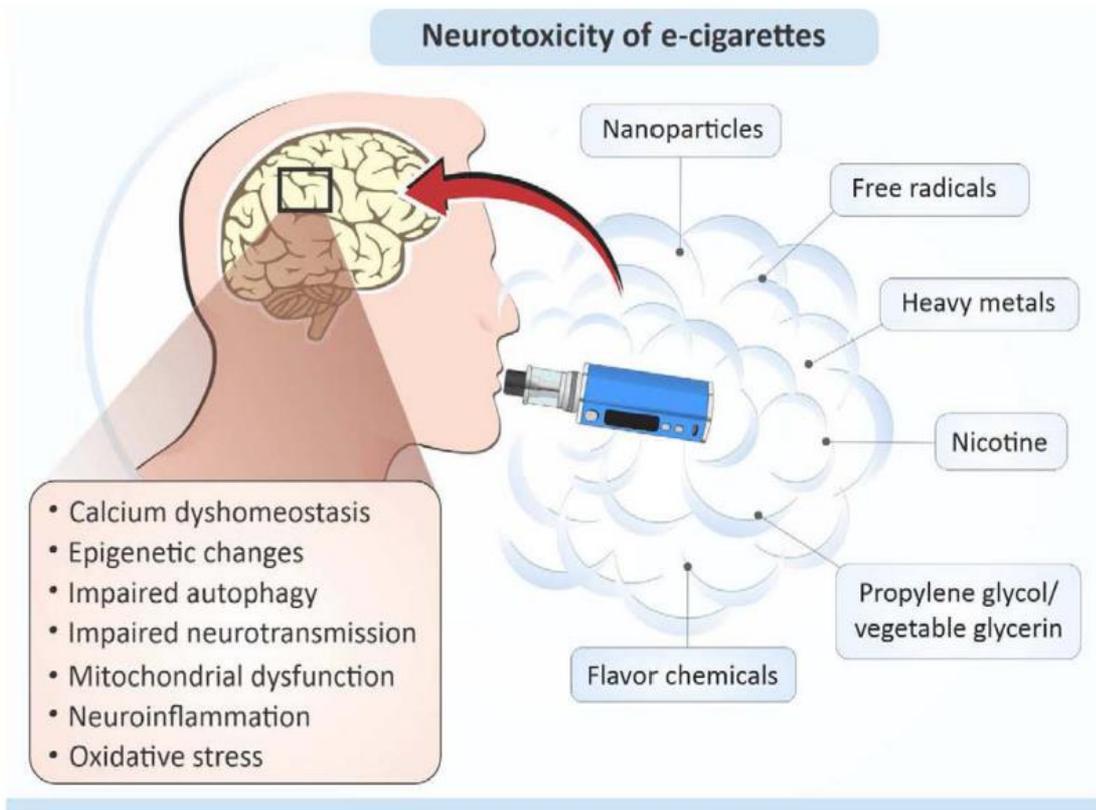
# Health implications

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- Lower levels of known toxins than combustible cigarettes
- Some unique/devastating but likely fleeting risks (EVALI) – regulation, constituents etc...
- Approx. 200 episodes of burns in US (unlikely to be more than tobacco?)

## Basic Sciences

- Acutely – no AE on cardiac function, but some effect on endothelial progenitor cells, markers of oxidative stress increase (greater increase in tobacco smokers)



*Food Chem Toxicol* 2020 April ; 138: 111245. doi:10.1016/j.fct.2020.111245.

#### Neurotoxicity of e-cigarettes

Joanna A. Ruskiewicz<sup>1</sup>, Ziyang Zhang<sup>2</sup>, Filipe Marques Goncalves<sup>3</sup>, Yousef Tizabi<sup>4</sup>, Judith T. Zeilikoff<sup>5</sup>, Michael Aschner<sup>2</sup>

# Lung pathology

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## Concerns around demonstrable levels of

- Nicotine derivatives
- Polycyclic aromatic hydrocarbons
- Heavy metals
- Aldehydes; formaldehyde from pyrolysis of glycerol

## All (except nicotine) in lower levels than for tobacco

- invitro cytotoxicity
- Substantial potential for lag time to pathology

# Pregnancy and vaping

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## Developing foetus

- Nicotine itself is a known teratogen
- No trials vaping in pregnancy

# Discussion

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## Monitoring and Evaluation

- good data
- willingness to change approach/regulation if situation changes

Skewing products to older age groups (diminish influence of bad actors)

Monitoring for harm – acknowledging if there is little

Development of practical prescribing-dispensing if appropriate

We also need to consider the next steps in tobacco control ....

# Conclusion

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Changing rapidly in line with market and regulatory forces rather than research...

Involvement will depend on risk appetite, approach to individual patient, what it means to have exhausted other options etc...

Has this debate diverted attention from other methods of reducing tobacco related harm ...

