

# To Vape or Not to Vape

Dr Charlotte Rayner

**Are Electronic cigarettes safe?**

**Is there ever an easy answer to a simple question in medicine?**

We know that smokers should quit and we know that the best way to do this is with assistance from a smoking cessation service. So should we be encouraging the use of Electronic cigarettes?

And what about the use in never or ex-smokers?



The power of conventional advertising and ever growing social media communication (100 million views on You tube by the end of 2014 alone) is pushing a message to both smokers and to non-smokers that electronic cigarettes are safe.

The flavouring, sleek packaging and rich colour are designed to appeal. Like alco-pops, sweet flavour appeals to the younger user.

E-cigs have been marketed as an alternative to smoking in locations where conventional cigarette smoking is prohibited and, although not regulated or licensed as smoking cessation devices, electronic cigarettes are being promoted by some as offering significant harm reduction for adult smokers to support smoking cessation.

*Indeed Public Health England suggested a year ago that, on "the best estimate so far," e-cigarettes are about 95% less harmful than tobacco cigarettes.*

*However, the evolving cell based science is suggesting to us that they are not safe.*

So what do we tell our patients, the public or indeed our children? Is it OK to allow for a parent to 'vape' in a car or on the side of a school hockey or football pitch, or a patient to 'vape' in the waiting room or hospital ward or a fellow diner to 'vape' in a restaurant?

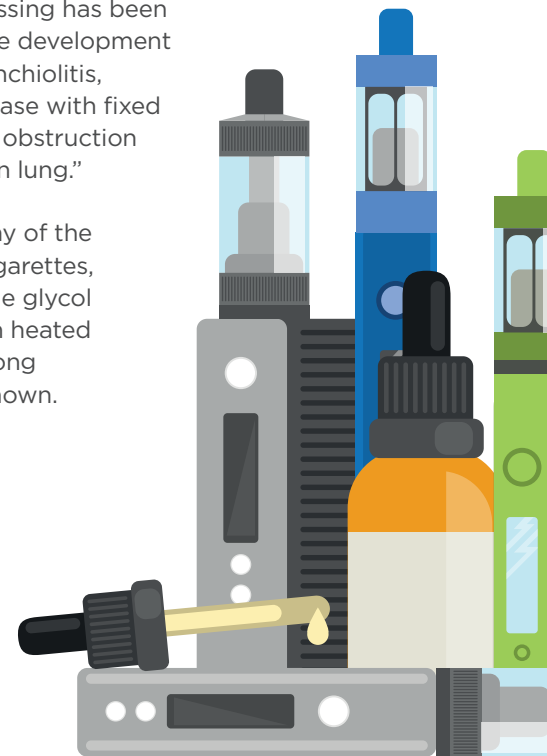
Adverse events reported from inhaling the smoke from e-cigarettes include: dry mouth, irritation of the mouth and throat, dizziness, ocular irritation and nausea.

Among adolescents, who never smoked cigarettes, e-cigarette users are twice as likely to report recent respiratory symptoms. When the solution (e-liquid) contains nicotine, the main adverse effects are those of nicotine.

A recent study has shown that DNA is damaged in a human cell culture model when exposed to the vapor from electronic cigarettes. Greatest damage is seen in terms of apoptosis and cell death if the e-cigarette vapor contained nicotine. Carcinogens and toxins such as diacetyl, acetaldehyde, and other harmful chemicals are present in the aerosol from some e-cigarettes. One of these, Diacetyl, an organic compound, has an intense buttery flavour.


Exposure of workers to Dicaetyl during food processing has been associated with the development of obliterative bronchiolitis, a serious lung disease with fixed irreversible airway obstruction known as "popcorn lung."

The effects of many of the substances in e-cigarettes, including propylene glycol and glycerol, when heated and inhaled over long periods, are not known.



The carcinogenic effect may be less and urinary excretion of carcinogens lower, but many uncertainties remain as to the composition of the different e-liquids and the long-term effects of the substances when they are heated and inhaled. (As of January 2014 there were already 466 brands, each with its own website and 7764 unique flavours).

The addictive effect is difficult to determine. Long-term use of e-cigarettes has been observed in about one-third of people who stopped smoking cigarettes. Starting to use an e-cigarette is associated with a greater likelihood of use of any combustible tobacco product including conventional cigarettes, cigars, and hookahs in the future.



*Electronic cigarettes (e-cigarettes) are battery-powered devices that deliver a heated aerosol, which typically contains nicotine, flavourings, and other additives, to the user.*

From a public health perspective, there is a trade-off between e-cigarettes that provide high levels of nicotine, high satisfaction and more effects on reducing craving for tobacco, but may also be addictive and probably cause more DNA damage and e-cigarettes that contain less nicotine and are less addictive, but are also less satisfactory and less efficient at relieving craving and at helping dependent smokers quit smoking.

### So, to answer the question, should you vape or not vape?

Whilst there is probably no reason to discourage smokers from substituting the proven, serious harms of tobacco smoke with the potential and poorly defined harms associated with e-cigarettes, there is limited evidence to support a significant benefit and we really don't know if long term use will create a different burden of lung and other end organ disease.

Non-smokers should not be encouraged to vape. Passive vape inhalation may also be damaging. We should work to limiting exposure to those who do not wish to use e-cigarettes and to those less able to make an informed choice.



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