

## EDITORIAL

# Miscommunication about the causes of the US outbreak of lung diseases in vapers by public health authorities and the media

Nicotine vaping has become a popular alternative to tobacco cigarette smoking worldwide. In the USA, where vaping nicotine e-liquid is legal for people aged over 18 years in all states, around 6.9 million adults vape nicotine [1]. Cannabis or tetrahydrocannabinol (THC) oil vaping is also popular but less common and its legal status depends on the state, the concentration of THC and the type of hemp used to manufacture the oil. Penalties for THC vaping vary state by state [2].

In April 2019, reports emerged from the USA of lung damage cases amongst people using e-cigarettes or vaporisers. The onset of symptoms was gradual with ‘breathing difficulty, shortness of breath and/or chest pain before hospitalization’ [3]. By November, the number had reached 2290, including 47 deaths, across 49 states. The outbreak may have peaked with the number of cases falling [4].

The Food and Drug Administration (FDA) and the Centres for Disease Control and Prevention (CDC), the two leading US federal agencies charged with protecting the public’s health, have published a number of public alerts and advisories on the epidemic since 17 August 2019. These agencies initially provided different public advice on the outbreak.

According to the FDA, many cases were ‘associated with the vaping of THC products’ and some may be caused by vaping cannabis-based oils to which vitamin E has been added [5]. It advised consumers to avoid vaping products that contain THC, not to buy ‘vaping products of any kind on the street’ and to ‘refrain from using THC oil or modifying/adding any substances to products purchased in stores’.

The CDC, by contrast, acknowledged that ‘most’ patients had reported using vaping products containing THC, but noted that some ‘have reported the use of e-cigarette products containing only nicotine’. As late as September, the CDC stressed that they had not identified a ‘specific e-cigarette or vaping product (devices, liquids, refill pods and/or cartridges) or substance ... linked to all cases’. It labelled the cases, ‘E-Cigarette, or Vaping Product, Use-Associated Lung Injury’ (EVALI).

In October, the CDC warned specifically against using illicit THC-containing products, in line with the

FDA [6]. This advice was strengthened in early November by an analysis of fluid from the lungs of 29 cases which found that all contained vitamin E acetate and most tested positive for THC, including three who denied using THC [7]. It advised on social media to ‘Avoid THC-containing products, especially from informal sources’ [8].

## Was nicotine vaping a plausible cause of the outbreak?

Vaping was the route of administration in all cases but it was initially unclear which substance caused the illnesses. Despite many early cases reporting use of illicit THC vaping products, nicotine products were still considered a possible cause because most cases also reported past or recent nicotine vaping and some only reported vaping nicotine. Nonetheless, even in September there were good reasons why commercially produced nicotine vaping products were unlikely to be the cause of these illnesses.

First, most cases developed suddenly within a short period, mostly in young males, in only one country. Over 40 million people have vaped nicotine in the UK, USA and Europe, and vaping has been around for nearly a decade without any similar clusters of serious acute cases of lung injury [9]. If vaping nicotine were the cause of these lung injuries, many more cases should have been reported in these countries soon after vaping products began to be used in the late 2000s. A preliminary report noted that ‘No previous case series ... has described large clusters of temporally related pulmonary illnesses linked to the use of e-cigarette products’ [10].

Second, support for the FDA’s initial hypothesis that the cause was vaping cannabis-based oils has strengthened over time. Cannabis ‘vapes’ now account for over 20% of cannabis sales in the USA [11,12]. The use of cannabis oils in vaporisers has also become a popular way of using cannabis in states in which recreational cannabis use is still illegal.

Third, cannabis oils, like nicotine-based vaporisers, have also been used since around 2014 with almost no

reports of lung injury [13]. What recently changed is the proliferation of black market cannabis vaping products, some of which are sold in the same packaging as legal cannabis vaping products. In states where cannabis is not available legally, there have been arrests for manufacturing and selling illicit cannabis vaping products [14,15].

In October, the CDC concluded that vaping contaminated THC products was the likely cause of the lung damage because: THC was present in most of the lung samples tested; most patients reported a history of using THC-containing products, particularly those street bought or from other informal sources (e.g. friends, family members, illicit dealers); and some persons who initially denied using THC were later found to have done so [16].

The FDA has consistently advised the public not to use bootleg THC vaping products [17]. It launched investigations that led to the arrest of people manufacturing illicit THC vaping products [18]. A large illicit THC vape manufacturing operation was located close to where most of the lung damage cases were reported in Illinois [19] and California, another hotspot for these cases, is a major source of illicit THC vaping products [20].

### Media coverage of the US outbreak

US media coverage has often followed the CDC's initial reports in implicating 'e-cigarettes' as the cause of the outbreak rather than the FDA's attribution to vaping cannabis oils. These early media stories accordingly advised the public to cease using 'e-cigarettes'.

The US media also linked these lung diseases to an "epidemic" of youth vaping in the USA. The *New York Times*, for example, published an op-ed by Michael Bloomberg and Matt Myers, the CEO of the Campaign for Tobacco-Free Kids, proposing a ban on the sale of all non-tobacco flavoured e-liquids to prevent these deaths [21].

The Australian media coverage of the US epidemic also reflected the CDC reports in suggesting that these illnesses are primarily caused by 'e-cigarettes'. The role of cannabis-based products was downplayed.

For example, the Melbourne *Age* published an article "Canary in the coal mine": US e-cigarette lung disease epidemic a worry: expert' which argued that deaths from severe lung disease in the USA: 'will strengthen the hand of Health Minister Greg Hunt, who has been resisting a push by Coalition MPs to legalise nicotine vaping in Australia' [22]. The *Age* editorialised that: 'Australia has been wise in not bowing to the demands of lobby groups seeking to have federal

and state governments ease restrictions on vaping' [23]. The editorial dismissed evidence on the effectiveness of e-cigarettes in smoking cessation as 'anecdotal', despite a number of randomised controlled trials reporting higher smoking cessation rates among persons who used e-cigarettes [24–26].

Similar themes were developed in *The Guardian* by Paul Karp: 'Vaping debate rages in Australia as critics accuse government of smokescreen' [27]. According to Karp, 'lobbyists have not given up on persuading the government to change its stance of banning e-cigarettes' despite the recent deaths in the USA. Foremost among the groups mentioned was the tobacco company Philip Morris, which was lobbying to have its heated tobacco device (IQOS) approved for sale in Australia. Karp did not explain the difference between IQOS (which heats tobacco sticks) and nicotine vaporisers (which heat liquid containing nicotine).

Misreporting of the US epidemic continued after the CDC concluded that the outbreak was attributable to vaping contaminated illicit cannabis products. In Australia, the ABC television show 7:30 aired a misleading story on vaping (5 November 2019) that heavily featured nicotine vaping in Australia after a lead on the US outbreak of lung injuries [28]. There was no mention that the CDC and FDA had linked the outbreak to the use of contaminated illicit THC products.

Nor did 7.30 mention the absence of cases in the UK, where nicotine vaping is widespread among smokers, but the vaping of cannabis oils is not. Dr Chris Zappala, from the Australian Medical Association claimed, 'We've seen a significant increase in recent months of vaping-related illnesses. Patients who, unfortunately, are becoming so unwell that they're ending up in intensive care and as I'm sure people are aware, there have been some deaths related to vaping'. Neither he nor the reporter clarified that no EVALI cases have occurred in Australia. By omitting the role of THC vaping products, 7.30 withheld critical information from the public on how to avoid these injuries.

Australian standards of press reporting include the principles of accuracy, balance, clarity and avoidance of harm [29]. These principles are important given that the media is frequently cited by the public as a source of health information and influence health behaviour, however they are often found lacking [30–32]. The failures of the Australian and international media to accurately convey the facts about this outbreak put public trust in the media, and the health authorities in these reports, at risk and may encourage the public to ignore future warnings in the midst of serious health emergencies. Many of the responses to the outbreak proposed in these stories, such as banning flavoured

vaping products or preventing access to nicotine vaping products, do not address the cause of the outbreak identified by US authorities, namely, the vaping of illicit cannabis products cut with vitamin E acetate.

The US investigation is still ongoing and the health authorities investigating the outbreak have not definitively identified the exact chemical that has caused the lung damage, which may be a chemical formed from vitamin E acetate. However, over the past 6 months, the evidence has strengthened considerably that nicotine vaping products are not the cause of EVALI. This has been reflected in the updated official communications from both FDA and CDC which have strengthened their warnings to avoid THC vaping products, particularly those purchased from informal sources. However, accurate, timely and complete reporting of these developments by the media has sometimes been lacking. The potential consequences of this misreporting include public misunderstanding, mistrust and potentially cases that could have been avoided if the correct information was widely communicated.

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