



Editorial

E-cigarette or Vaping product use Associated Lung Injury (EVALI): Health issues going beyond anaesthetic and surgical perioperative procedures



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Since August 2019, a health alert has been issued in the United States concerning the risks associated with the use of electronic cigarettes (e-cigarette) and other vaporising devices. As of November 13th 2019, no less than 2172 American users had been hospitalised for severe lung injury and among them, 42 died [1,2]. Centres for Disease Control and Prevention in the United States (CDC), the U.S. Food and Drug Administration (F.D.A.), state and local health departments as well as clinicians are investigating a multistate outbreak of lung injury called E-cigarette or Vaping product use Associated Lung Injury (EVALI). Cases are updated weekly on the CDC website (Fig. 1) [1]. To date, no specific lung injuries were reported and pathophysiological pathway includes diffuse pulmonary opacities, systemic and digestive symptoms, associated with elevated levels of inflammatory markers [3,4]. In addition, the diffuse pulmonary opacities seen on CT scans for several cases do not have low attenuation areas consistent with classic lipoid pneumonia. The only commonality among all cases is the use of e-cigarette or a vaporisation device during the 3 months preceding the onset of respiratory disease symptoms. Tetrahydrocannabinol (THC) was found in most of the samples tested by F.D.A. to date and most patients reported a history of using THC-containing products. Of the 849 patients for whom detailed consumption information was available on October 15th 2019, about 78% used THC-containing products (31% reported exclusive use of THC) and about 58% reported nicotine-containing products (10% reported exclusive use of nicotine-containing products) [1]. The analytical results of the products as well as the patients' consumption history suggested that products purchased on the

street or informally (family, dealer) were most often involved. Recently, CDC have detected a chemical of concern in biologic samples from patients with these lung injuries. These findings provide direct evidence of vitamin E acetate (oil) at the primary site of injury within the lungs. Under these conditions of uncertainty, CDC recommends [1]:

- not using e-cigarette or vaping products that contain THC;
- not buying any type of e-cigarette or vaping products, particularly those containing THC, off the street;
- not modifying or adding any substances to e-cigarette or vaping products that are not intended by the manufacturer, including products purchased through retail establishments;
- refraining from the use of all e-cigarette or vaping products. Such a recommendation is similar to the precautionary principle in France, which intends to protect public health.

On the other side of the Atlantic, the European Union (E.U.) has not yet issued a ban on the use of these devices. In fact, e-cigarette is one of the products whose regulations differ according to the Member States. It can be considered as a pharmaceutical, tobacco, or consumer product. E.U. has established quality, information and safety requirements for e-cigarettes or vaping products (nicotine cap rate: 20 mg/ml, refills with safety cap...) [6]. The composition of e-cigarettes or vaping products must be transmitted to the public authorities. Any new product must be notified to the Member States six months before its launch. In addition, the use of e-cigarette varies considerably from one country to another. England promotes e-cigarette as a smoking cessation method and is used by 5% of the population [5,6]. In France and Belgium, 4% of individuals over 15 years old are currently vaping, but in most other European countries, less than 2% of the population currently uses an e-cigarette [6]. In France, since the beginning of October 2019, the Ministry of Solidarity and Health in collaboration with *Santé Publique France* (Public Health France), health agencies, partners of the addiction prevention network and societies of emergency medicine, intensive care and pneumology have set up a system for reporting and investigating cases of lung injury among users of e-cigarette or vaping products [7]. Users and health professionals can report cases through the reporting web system [8]. In addition, the website of *Santé Publique France* presents the monitoring system for severe lung injury related to vaping [9].

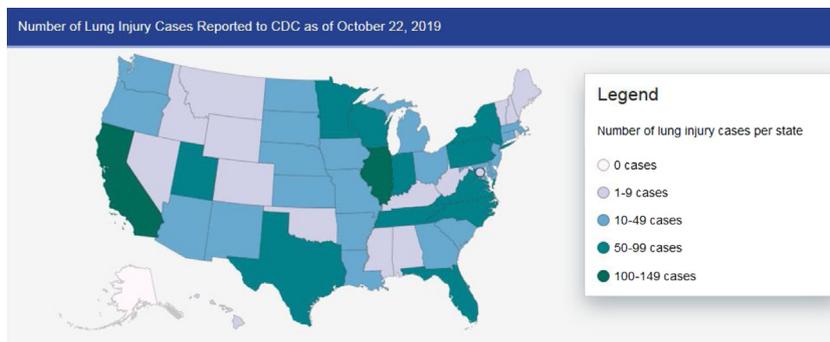


Fig. 1. Number of Lung Injury Cases Reported to CDC as of October 22, 2019.

Vaping has been promoted to reduce the harmful effect of tobacco consumption [10,11]. The e-cigarette use does not expose to carbon monoxide and could thus be considered a simple and effective risk reduction tool. For surgery, perioperative use remains an issue to be discussed as, no recommendations have been given in view of the lack of data, including for the U.S. [12]. In a survey of more than 1.600 patients in France, 2% of patients reported vaping until the day before the operation and 0.1% in the morning of the surgery [13]. Given the respiratory complications reported in the U.S., this preoperative use raises questions, even if the number of patients concerned could remain low. The *Société Francophone de Tabacologie* has reminded mid-October 2019 that smokers intending to quit with e-cigarette have to use products complying with French standards and registered with the *Agence Nationale de Sécurité Sanitaire de l'Alimentation, de l'Environnement et du Travail*. Use of e-cigarette at the correct temperature and respecting these recommendations can help smoking cessation [14,15].

In conclusion, vaping might be a risky practice, especially under unsafe conditions of use, but pending the results of the ongoing American and European surveys, recommendations for surgery, anaesthesia and perioperative period remain unknown at this time.

Disclosure of interest

The authors declare that they have no competing interest.

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