



EU EARLY WARNING SYSTEM BRIEFING

Serious pulmonary disease among people who use e-cigarettes (vaping); cause unknown — Multiple States, United States, 2019

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1. Read me first

Health officials in the United States are reporting a cluster of serious pulmonary disease among people who use e-cigarettes (vaping) in multiple states across the country. So far, 193 potential cases have been identified; one of the cases has died. The cause of the disease is unknown. Cases report vaping a range of products and substances including those containing nicotine, tetrahydrocannabinol (THC), cannabis, cannabidiol (CBD), and synthetic cannabinoids. Investigators have not identified any product or substance linked to all of the cases. Available evidence does not suggest that an infectious disease is the principal cause.

The purpose of this briefing is to:

- Highlight an unusual cluster of serious pulmonary disease in the United States linked to e-cigarette use. Cases report use of a range of products and substances (including THC, CBD and synthetic cannabinoids). The cause is unknown but not thought to be an infectious disease.
- Highlight that, although the cause is unknown, a potential threat to Europe cannot be excluded at this time due to the globalised supply chain for e-cigarette products and product ingredients.
- Request that you report any unusual or unexpected toxicity, such as serious pulmonary disease, linked to the use of e-cigarettes as soon as possible so that we can improve our understanding of any potential risks. Data should be reported to: ews@emcdda.europa.eu

2. Briefing

Details of the event

The U.S. Centers for Disease Control and Prevention (CDC) is reporting that as of 22 August 2019, a total of 193 potential cases of severe pulmonary disease associated with e-cigarette product use (vaping) [1] have



been reported by 22 states in the United States.¹ The cases were reported between 28 June and 20 August of this year. One death has been reported [2–4].

So far the cause of the disease has not been identified, but cases have reported e-cigarette product use. Available evidence does not suggest that an infectious disease is a principle cause of the disease. Investigators have not identified any product or substance linked to all of the cases [2–4].

In many cases patients report a gradual start of symptoms, including cough, breathing difficulty, shortness of breath, and/or chest pain before hospitalization. Some cases have also reported gastrointestinal illnesses, including vomiting, diarrhoea, and fatigue. Chest radiographs showed bilateral opacities, and CT imaging of the chest demonstrated diffuse ground-glass opacities, often with sub-pleural sparing. Some patients experienced progressive respiratory compromise requiring mechanical ventilation but subsequently improved with corticosteroids [2–4].

Cases have reported the use of a large range of products and substances, including those containing nicotine, tetrahydrocannabinol (THC), cannabis, cannabidiol (CBD), and synthetic cannabinoids [2–5]. In many cases patients have reported use of THC-containing products while speaking to health care professionals in follow-up interviews by health department staff. However, no specific product has been identified in all cases nor has any product been conclusively linked to the illnesses [2–4].

The U.S. Food and Drug Administration (FDA) is working with CDC and state health officials to gather information on any products or substances used and providing technical and laboratory assistance [2–4].

E-cigarette cartridges and refill liquids are multi-ingredient products containing the active (drug) substance along with a solvent (such as propylene glycol and/or vegetable glycerine), and flavourings [1,6–9]. Although the cause of the disease in the United States is currently unknown, a potential threat to the EU cannot be excluded at this time due the globalised supply chain for vaping products and product ingredients.

The EMCDDA will provide an update on this event as needed.

3. Action required

The EMCDDA requests that you report any unusual or unexpected toxicity, such as serious pulmonary disease, linked to the use of e-cigarettes as soon as possible so that we can improve our understanding of any potential risks. Data should be reported to: ews@emcdda.europa.eu

4. Further information

- Wisconsin Department of Health Services. Severe pulmonary disease among adolescents who reported vaping. 25 July 2019. <https://www.dhs.wisconsin.gov/dph/memos/beoh/2019-02.pdf>

¹ California, Connecticut, Illinois, Indiana, Iowa, Minnesota, Michigan, North Carolina, New Jersey, New Mexico, New York, Pennsylvania, Texas, Utah, Wisconsin, and additional states pending verification.



- Illinois Department of Public Health. Illinois Department of Public Health warns of hospitalizations potentially tied to vaping. 2 August 2019. <http://www.dph.illinois.gov/news/illinois-department-public-health-warns-hospitalizations-potentially-tied-vaping>
- Illinois Department of Public Health. Number of hospitalizations potentially tied to vaping increases. 9 August 2019. <http://www.dph.illinois.gov/news/number-hospitalizations-potentially-tied-vaping-increases>
- California Department of Public Health. Severe acute pulmonary disease associated with cannabis or cannabidiol oil vaping. 12 August 2019. <http://publichealth.lacounty.gov/eprp/Health%20Alerts/CDPHPulmonaryDiseaseandVaping081219.pdf>
- Minnesota Department of Health. Severe acute lung disease among youth who report vaping. 13 August 2019. <https://www.health.state.mn.us/communities/ep/han/2019/aug13lung.pdf>
- Indiana State Department of Health. Severe respiratory illness among Indiana residents who reported vaping. 14 August 2019. <https://www.ismanet.org/pdf/IHAN-ARDSandVaping8-14-19.pdf>
- New York State Department of Health. Unexplained vaping-associated pulmonary illness. 15 August 2019. https://www.health.ny.gov/press/advisories/docs/health_advisory_pulmonary_08-15-2019.pdf
- Texas Department of State Health Services. Severe lung disease among persons who report vaping. 16 August 2019. <https://www.dshs.state.tx.us/news/releases/2019/HealthAlert-08162019.aspx>
- Pennsylvania Department of Health. Severe acute pulmonary disease associated with vaping. 16 August 2019. <https://www.health.pa.gov/topics/Documents/HAN/2019-PAHAN--454-08-16-ADV-Vaping.pdf>
- New Jersey Department of Health. Severe pulmonary disease in people who report vaping. 16 August 2019. https://www.state.nj.us/health/news/2019/NJLINC_message_081619_final.107983.pdf
- Connecticut Department of Public Health. DPH investigating second case of severe respiratory symptoms possibly related to vaping. 21 August 2019. <https://portal.ct.gov/DPH/Press-Room/Press-Releases---2019/DPH-Investigating-Second-Case-of-Severe-Respiratory-Symptoms-Possibly-Related-to-Vaping>
- New Mexico Department of Health. New Mexico Department of Health warns about vaping-associated lung disease. 21 August 2019. <https://nmhealth.org/news/awareness/2019/8/?view=787>
- Illinois Department of Public Health. Illinois resident experiencing respiratory illness after vaping dies. Number of respiratory cases in Illinois doubles. 23 August 2019. <http://www.dph.illinois.gov/news/illinois-resident-experiencing-respiratory-illness-after-vaping-dies>

5. Data use restrictions

If you received this briefing as a national early warning system correspondent at the Reitox National Focal Points, please note that it must be restricted to your national early warning system network. Do not make it public. If you have any questions in this respect, please contact the EMCDDA.



If this briefing has been sent to you by your national early warning system correspondent at the Reitox National Focal Point² please direct any questions that you may have to them.

6. References

1. Breland A, et al. Electronic cigarettes: what are they and what do they do? *Ann N Y Acad Sci.* 2017;1394(1):5–30. <https://doi.org/10.1111/nyas.12977>
2. U.S. Centers for Disease Control and Prevention. CDC, FDA, States continue to investigate severe pulmonary disease among people who use e-cigarettes. 21 August 2019. <https://www.cdc.gov/media/releases/2019/s0821-cdc-fda-states-e-cigarettes.html>
3. U.S. Centers for Disease Control and Prevention. CDC urges clinicians to report possible cases of unexplained vaping-associated pulmonary illness to their state/local health department. 14 August 2019. <https://emergency.cdc.gov/newsletters/coca/081619.htm>
4. U.S. Centers for Disease Control and Prevention. Transcript of August 23, 2019, Telebriefing on severe pulmonary disease associated with use of e-cigarettes. 23 August 2019. <https://www.cdc.gov/media/releases/2019/t0823-telebriefing-severe-pulmonary-disease-e-cigarettes.html>
5. Wisconsin Department of Health Services. Severe lung disease among people who reported vaping. 22 August 2019. <https://www.dhs.wisconsin.gov/outbreaks/index.htm#severe-lung-disease-among-people-who-reported-vapingupdated-8-22-2019>
6. Peace MR et al. Evaluation of two commercially available cannabidiol formulations for use in electronic cigarettes. *Front Pharmacol.* 2016;7:279. <https://doi.org/10.3389/fphar.2016.00279>
7. Peace MR, et al. Analysis of a commercial marijuana e-cigarette formulation. *J Anal Toxicol.* 2016;40(5):374-8. <https://doi.org/10.1093/jat/bkw021>
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9. Poklis JL, et al. The unexpected identification of the cannabimimetic, 5F-ADB, and dextromethorphan in commercially available cannabidiol e-liquids. *Forensic Sci Int.* 2019;294:e25-e27. <https://doi.org/10.1016/j.forsciint.2018.10.019>

² <http://www.emcdda.europa.eu/about/partners/reitox-network>