

Oct. 16, 2019

Georgia Department of Public Health Urges Clinicians to Report Possible Cases of Vaping-Associated Lung Injury

Summary

- As of Oct. 8, 2019, 1,299 cases (including 26 deaths) of e-cigarette- or vaping- associated lung injury (EVALI) requiring hospitalization and respiratory support among previously healthy children and adults have been reported across 49 states and 1 U.S. territory.
- As of Oct. 15, 21 cases have been identified in Georgia, including 2 deaths, while several others are currently under investigation by state and local health officials.
- All patients reported vaping nicotine, tetrahydrocannabinol (THC), and/or cannabidiol (CBD)-containing products. At this time, no infectious cause has been identified.
- Clinicians who see or have recently seen cases similar to those described above should report them to Georgia Poison Center (GPC) at 1-800-282-5846.

Background

Based on reports from several states (as well as cases in Georgia), patients have experienced respiratory symptoms (cough, shortness of breath or chest pain), and some have also experienced gastrointestinal symptoms (nausea, vomiting or diarrhea) or non-specific constitutional symptoms (fatigue, fever or weight loss). Symptoms typically develop over a period of days, but sometimes can manifest over several weeks. Gastrointestinal symptoms sometimes preceded respiratory symptoms. Fever, tachycardia, and elevated white blood cell counts have been reported in the absence of an identifiable infectious disease. Many patients have sought initial care in ambulatory settings, some with several visits, before hospital admission.

Radiologic findings have varied and are not present in all patients upon initial presentation. Bilateral pulmonary infiltrates and diffuse ground-glass opacities have been reported. Many patients required supplemental oxygen, some required assisted ventilation and oxygenation, and some were intubated. Some patients have been treated with systemic corticosteroids with demonstrated improvement. Antimicrobial therapy alone has not consistently been associated with clinical improvement. Assessment for infectious etiologies has not identified an infectious cause. A cluster of several patients from North Carolina have been diagnosed with lipoid pneumonia based on clinical presentation and detection of lipids within bronchoalveolar lavage samples stained specifically to detect oil, however this has not been the case among all patients; some have exhibited injuries more consistent with chemical burns or exposures.

All patients have reported using e-cigarette products or other vaping devices and the symptom onset has ranged from a few days to several weeks after vaping. To date, no single substance or vaping device has been consistently associated with illness, although most patients report using a THC-containing product. DPH is facilitating collecting product specimens from case-patients for testing at the U.S. FDA Forensic Chemistry Center.

Recommendations for Clinicians

1. Report cases of severe lung injury of unclear etiology and a history of vaping/e-cigarette product use within the past 90 days to the Georgia Poison Center (GPC) at 1-800-282-5846.
2. Ask all patients who report e-cigarette or vaping product use within the last 90 days about respiratory, gastrointestinal and constitutional symptoms.
3. If vaping product use is suspected as a possible etiology of a patient's lung injury, obtain detailed history regarding the following, using empathetic, non-judgmental private questioning:
 - Substance(s) used: nicotine, cannabinoids (e.g., marijuana, THC, THC concentrates, CBD, CBD oil, synthetic cannabinoids [e.g., K2 or spice], hash oil, Dank vapes), flavors or other substances
 - Substance source(s): commercially available liquids (i.e., bottles, cartridges or pods), homemade liquids and reuse of old cartridges or pods with homemade or commercially bought liquids
 - Device(s) used: manufacturer; brand name; product name; model; serial number of the product, device or e-liquid; if the device can be customized by the user; and any product modifications by the user (e.g., exposure of the atomizer or heating coil)
 - Where the product(s) were purchased
 - Method of substance use: aerosolization, dabbing or dripping
4. Consider all possible causes of illness in patients reporting respiratory and gastrointestinal symptoms. Evaluate and treat for other possible causes of illness (e.g., infectious, cardiac, rheumatologic, neoplastic) as clinically indicated. Consider consultation with specialists (pulmonary, infectious disease, critical care, medical toxicology, psychology, psychiatry, addiction medicine) as appropriate. For more information regarding laboratory and infectious disease testing see [Update: Interim Guidance for Health Care Providers Evaluating and Caring for Patients with Suspected E-cigarette, or Vaping, Product Use Associated Lung Injury — United States, October 2019](#)
5. Patients with suspected EVALI should be admitted to the hospital if they have decreased oxygen (O₂) saturation (<95%) on room air or are in respiratory distress. Outpatient management might be considered on a case-by-case basis for patients with less severe illness; follow-up within 24-48 hours is recommended.
6. A chest X-ray (CXR) should be obtained on all patients with a history of vaping and who have respiratory or gastrointestinal symptoms, particularly when accompanied by decreased O₂ saturation (<95%). Chest computed tomography (CT) might be useful when the CXR result does not correlate with clinical findings, or to evaluate severe or worsening disease, or complications, or other illnesses in the differential diagnosis.
8. Health care providers should consider empiric use of a combination of antibiotics, antivirals or steroids, based upon clinical context. Clinical improvement has been reported with the use of corticosteroids. Early initiation of antibiotic treatment for community-acquired pneumonia in accordance with established guidelines should be strongly considered. **During influenza season, health care providers should consider influenza in all patients with suspected of having EVALI.** Antivirals should be considered in patients suspected of having influenza in accordance with established guidelines. The decision to use corticosteroids and dosing regimen should be made on a case-by-case basis based on risks and benefits and the likelihood of other etiologies, and should be made in consultation with a pulmonologist when possible.
9. Patients discharged from the hospital after inpatient treatment of EVALI should have a follow-up visit no later than 1-2 weeks after hospital discharge. Patients who received

care for EVALI on an outpatient basis should have close follow-up within 24-48 hours to assess and manage possible worsening lung injury.

10. Advising patients to discontinue use of e-cigarette, or vaping, products is an integral part of the patient's care for EVALI. Cessation of e-cigarette, or vaping, products might speed recovery; resuming use of e-cigarette, or vaping, products has the potential to cause recurrence of symptoms or lung injury. Patients using e-cigarette, or vaping, products to quit cigarette smoking, should not return to smoking cigarettes.
11. Determine if any remaining product, including devices and liquids, are available for testing. Testing can be coordinated with DPH.
12. Lipid-laden alveolar macrophages have been detected in bronchoalveolar lavage (BAL) fluid by lipid staining methods (e.g., Oil Red O, Sudan Black). The decision about whether to perform a BAL should be based on individual clinical circumstances in consultation with pulmonary specialists.
13. Lung biopsies have been performed on some patients. If a lung biopsy is obtained, lipid staining may be considered during pathologic examination, and is best performed on fresh tissue. Routine pathology tissue processing involves the application of alcohols, which remove lipids, to formalin-fixed tissues. Conducting routine tissue processing and histopathologic evaluation is still important. Consider consultation with specialists in pulmonary medicine and pathology to help inform any evaluation plan.
 - A spectrum of pathologic findings associated with acute lung injury have been seen, including diffuse alveolar damage, acute fibrinous pneumonitis or bronchiolitis, or organizing pneumonia often with vacuolated or foamy macrophages and/or pneumocytes.

For More Information

- CDC's updated interim guidance for providers evaluating and caring for patients with suspected vaping-associated lung injury: https://www.cdc.gov/mmwr/volumes/68/wr/mm6841e3.htm?s_cid=mm6841e3_e&deliveryName=USCDC_921-DM10905
- CDC's most recent health alert, which includes more detail on the types of devices/products in question: <https://emergency.cdc.gov/han/han00421.asp>
- For latest CDC updates on the national outbreak: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html
- MMWR on Vaping-Associated Lipoid Pneumonia Cases in North Carolina: https://www.cdc.gov/mmwr/volumes/68/wr/mm6836e1.htm?s_cid=mm6836e1_e&deliveryName=USCDC_921-DM8485
- Information on electronic cigarettes and similar devices: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/index.htm
- For assistance with management of patients suspected of illness related to recreational, illicit, or other drugs: Call GPC at 1-800-282-5846.

Clinicians who become aware of cases similar to those described above should report them to GPC at 1-800-282-5846.