



**Date:** August 29, 2019

**To:** Healthcare Facilities Administrators and Staff

**From:** San Joaquin County Public Health Officer

**Subject: Updates on Vaping Associated Pulmonary Injury (VAPI)**

Physicians in California and at least 23 other states have documented over 200 cases of acute pulmonary disease associated with vaping over the past three months. Since June, 36 cases of vaping-associated pulmonary injury requiring hospitalization have been reported to the California Department of Public Health (CDPH). Most patients report vaping the cannabis compounds THC and/or CBD, and some patients also report vaping nicotine products, although the exact cause of illness is not yet known. No deaths have been reported to date in California.

Evaluation for infectious etiologies has been negative to date in all patients. All patients reported vaping in the weeks prior to hospital admission, and a reported common exposure between these patients is that they have been vaping cannabis or CBD oils. The names and types of products used remain unknown, and patient interviews are ongoing. Other states have reported recent similar cases.

**Information for Physicians and Hospitals**

The clinical presentation of VAPI can initially mimic common pulmonary diagnoses like pneumonia, but patients typically do not respond to antibiotic therapy. High clinical suspicion is necessary to make the diagnosis of VAPI. In some cases, patients sought care at outpatient clinics in the days prior to hospital presentation and received antibiotics for presumed pneumonia or bronchitis, which did not improve their symptoms.

**Clinical Information on Vaping-Associated Pulmonary Injury**

**Clinical course**

Patients typically present for care within a few days to weeks of symptom onset. At the time of hospital presentation, patients are often hypoxic and meet systemic inflammatory response syndrome (SIRS) criteria, including high fever. In some cases, patients had progressive respiratory failure following admission, leading to intubation.

Time to recovery for hospital discharge has been from days to weeks.

**Symptoms**

Commonly reported symptoms include:

- Shortness of breath, cough
- Fatigue, body aches

- Fever
- Vomiting, diarrhea

### **Laboratory findings**

- Non-specific laboratory abnormalities have been reported, including elevation in white blood cell count, transaminases, procalcitonin, and inflammatory markers.
- Negative infectious disease testing (influenza, respiratory viral panel, cultures, etc.).

### **Imaging**

Imaging abnormalities are typically bilateral and may be described as:

- Chest x-ray: pulmonary infiltrates or opacities
- Chest CT: ground-glass opacities

### **Diagnosis**

VAPI is a clinical diagnosis of exclusion when infectious, rheumatologic, neoplastic, cardiac, or other processes cannot explain an acute pulmonary illness in a patient known to vape cannabinoids and/or nicotine. The diagnosis is commonly suspected when the patient does not respond to antibiotic therapy, and testing does not reveal an alternative diagnosis.

Common documented hospital diagnoses for these patients have included: acute respiratory distress syndrome (ARDS), sepsis, acute hypoxic respiratory failure, pneumonitis, and pneumonia.

### **Treatment**

- Guidelines for treatment of VAPI are not yet available.
- Most patients require supplemental oxygen via nasal cannula, high-flow oxygen, bi-level positive airway pressure (BiPAP), or mechanical ventilation.
- Anecdotally, treating physicians have trialed the use of steroids with some possible benefit. Information on dosing and duration of steroids is not available.

## **Action Items for Physicians**

Ask patients presenting with respiratory complaints in both outpatient and inpatient settings about their use of vaping or “dabbing” devices, especially patients who had an initial diagnosis of pneumonia or bronchitis that did not respond to antibiotics. For patients who do vape, ask these follow-up questions:

### **Type of vape used**

- Do you vape nicotine-containing substances?
- Do you vape substances that contain cannabis or cannabinoid compounds like THC and CBD?

### **Amount of used**

- When was the last time you vaped?
- How often do you vape?
- How long have you been vaping?

**Source**

- Where do you purchase your vaping supplies?
- What brands are your vaping devices, cartridges, and oils?

**Report all suspected cases to your local health department within 24 hours.**

- An official from your local health department may come to the hospital to interview the patient or family members, if appropriate.
- The local health department will collect any biospecimens remaining from the patient from the hospital laboratory. You do not have to order any specific tests on blood, urine, or cultures that you would not normally request for the care of the patient.
- The local health department will collect vape devices and cartridges from the patient or family for testing.

Vaping-Associated Pulmonary Injury. California case definition - August 26, 2019.	
<b>Confirmed</b>	Respiratory illness requiring hospitalization <b>AND</b> Using an e-cigarette (“vaping”) or dabbing* in 90 days prior to symptom onset <b>AND</b> Pulmonary infiltrate, such as opacities on plain film chest radiograph or ground-glass opacities on chest CT <b>AND</b> Absence of pulmonary infection on initial work-up: <u>Minimum criteria</u> include negative respiratory viral panel and influenza PCR or rapid test. All other clinically indicated respiratory ID testing (e.g., urine strep pneumo/ legionella/ mycoplasma, sputum culture if productive cough, BAL culture if done, blood culture, HIV-related opportunistic respiratory infections if appropriate) must be negative <b>AND</b> No evidence in medical record of alternative plausible diagnoses (e.g., cardiac, rheumatologic or neoplastic process).
<b>Probable</b>	Respiratory illness requiring hospitalization <b>AND</b> Using an e-cigarette (“vaping”) or dabbing* in 90 days prior to symptom onset. <b>AND</b> Pulmonary infiltrate, such as opacities on plain film chest radiograph or ground-glass opacities on chest CT <b>AND</b> Infection identified via culture or PCR, but clinical team** believes this is not the sole cause of the underlying respiratory disease process –OR– No evidence of pulmonary infection, but <u>minimum criteria</u> to rule out pulmonary infection not met (testing not performed) <b>AND</b> No evidence in medical record of alternative plausible diagnoses (e.g., cardiac, rheumatologic or neoplastic process).
<b>Footnotes</b>	* Includes using an electronic device (e.g., electronic nicotine delivery system (ENDS), electronic cigarette, e-cigarette, vaporizer, vape(s), vape pen, dab pen, or other) or dabbing to inhale substances (e.g., nicotine, marijuana, THC, THC concentrates, CBD, synthetic cannabinoids, flavorings, or other substances).  ** Clinical team caring for the patient.

- Clinicians who become aware of cases similar to those described above should report them to SJCPHS at 209-468-3827 or [info@sjcphs.org](mailto:info@sjcphs.org).
- If the patient has a vaping product in hand, please collect, hold and notify SJCPHS.