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## Health Advisory

To: Healthcare Providers

From: Andy Miller, M.D. (signed original on file)

Date: August 29, 2019

Re: Vaping-Associated Pulmonary Injury

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### **Purpose**

The purpose of this Health Advisory is to alert healthcare providers of the possibility of severe acute vaping associated pulmonary injury (VAPI), and request that providers report any possible cases to Butte County Public Health Department (BCPHD).

### **Current Situation**

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. Most patients in California report vaping cannabis products such as THC or CBD, and some report vaping nicotine-containing liquids as well. Some patients have reported using vaping products that they purchased from unlicensed, unregulated entities.

Patients typically present to the hospital with cough, difficulty breathing, fever, and sometimes vomiting and diarrhea. In many cases, the initial diagnosis was presumed to be infectious, but no evidence of infection or other process to explain the pulmonary disease was found. All cases in California have been hospitalized, with most requiring respiratory support with supplemental oxygen, high-flow oxygen, or bi-level positive airway pressure (BiPAP). At least ten patients had respiratory failure requiring mechanical ventilation. No deaths have been reported to date in California.

BCPHD and other local health departments are collecting information on vaping habits and products used from patients who are suspected of having vaping-associated pulmonary injury (VAPI).

### **The numbers in California as of 8/27/2019:**

Total: 36 cases (24 men, 12 women)

Ages: 14-70 (median age 27)

Total counties: 13 counties across the state

### **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.

### **Action Items for Physicians:**

- 1) 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 use**
    - 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
  
- 2) Report all suspected cases to your local health department within 24 hours.
  - A BCPHD staff member may contact the patient or family members, if appropriate, to collect additional information.
  - BCPHD requests any biospecimens remaining from the patient be forwarded from the hospital laboratory to BCPHD laboratory. Providers do not have to order any specific tests on blood, urine, or cultures that would not normally be requested for the care of the patient.
  - BCPHD will collect vape devices and cartridges from the patient or family for testing.
  
- 3) **Suspected Cases**

Please attempt to collect any vaping devices, cartridges, and liquids from affected patients and contact BCPHD at the number below so that the product can be collected for testing. Keep samples sealed, stored in a secure manner, and ideally under refrigeration. Ensure samples are labeled with documentation that allows for identification of the case patient from which they were obtained and **complete the attached Butte County Chain of Custody Log Form.**

### **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 Negative infectious disease testing (influenza, respiratory viral panel, cultures, etc.).

### **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, bilevel 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.

### **Case Definition for Vaping-Associated Pulmonary Injury (VAPI)**

A case of VAPI meets the following criteria:

- Respiratory illness requiring hospital admission;
- History of vaping or dabbing within 90 days of symptom onset;
- Pulmonary infiltrates or opacities on chest radiograph or chest CT
- Clinical presentation is not explained by infectious or other alternate etiology.

### **Reporting**

Providers are strongly encouraged to report patients with illnesses meeting the case definition above to Butte County Public Health Department at **530-552-3929 during business hours**.

### **Categories of urgency levels:**

**Health Alert:** conveys the highest level of importance; warrants immediate action or attention

**Health Advisory:** provides important information for a specific incident or situation; may not require immediate action

**Health Update:** provides updated information regarding an incident or situation; unlikely to require immediate action

