##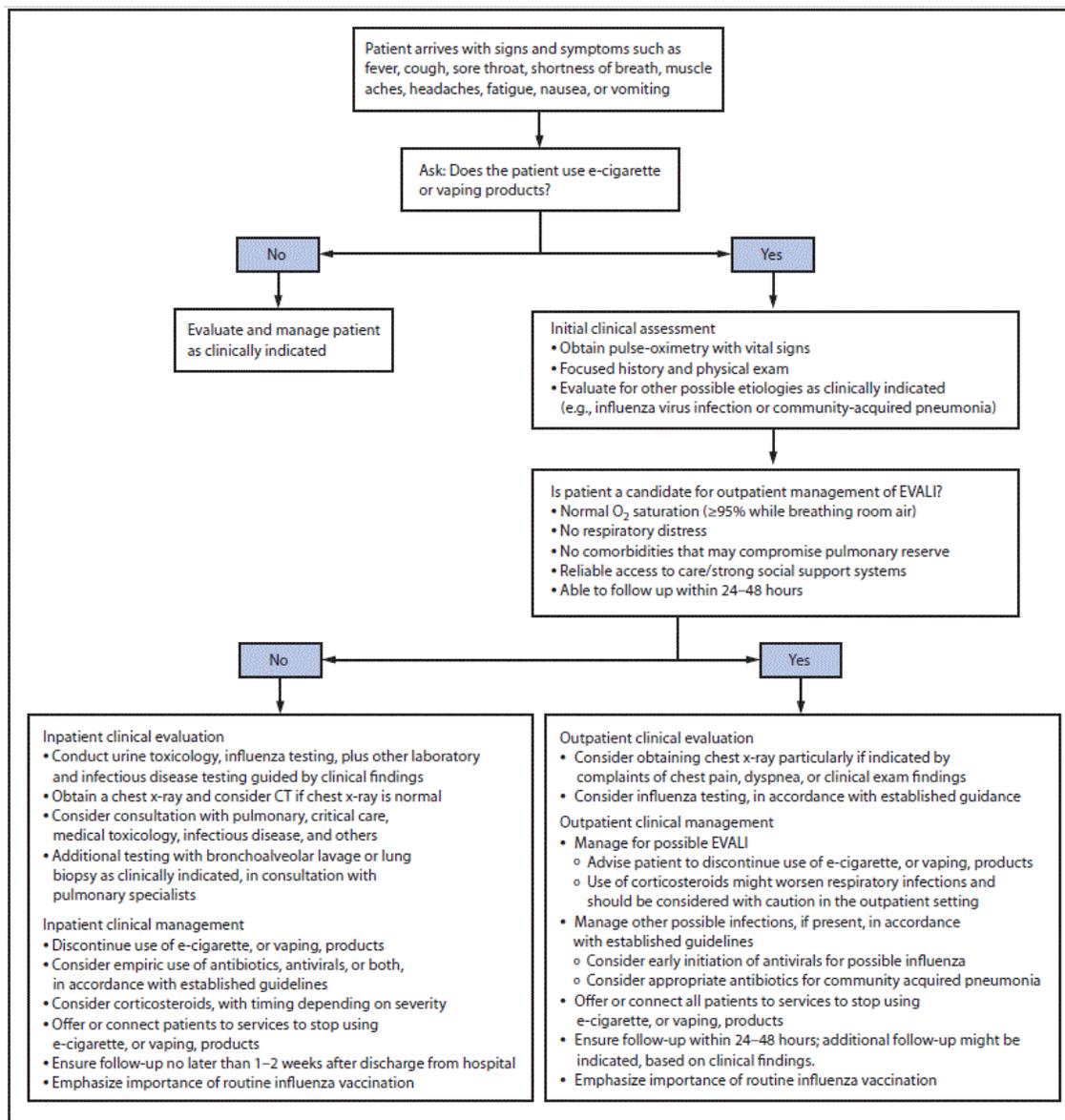 Algorithm for management of patients*,†,§,¶ with respiratory, gastrointestinal, or constitutional symptoms and e-cigarette, or vaping, product use

https://www.cdc.gov/mmwr/volumes/68/wr/mm6846e2.htm

Patient arrives with signs and symptoms such as fever, cough, sore throat, shortness of breath, muscle aches, headaches, fatigue, nausea, or vomiting

Ask: Does the patient use e-cigarette or vaping products?

No

Evaluate and manage patient as clinically indicated

Yes

Initial clinical assessment
• Obtain pulse-oximetry with vital signs
• Focused history and physical exam
• Evaluate for other possible etiologies as clinically indicated
  (e.g., influenza virus infection or community-acquired pneumonia)

Is patient a candidate for outpatient management of EVALI?
• Normal O_2 saturation (≥95% while breathing room air)
• No respiratory distress
• No comorbidities that may compromise pulmonary reserve
• Reliable access to care/strong social support systems
• Able to follow up within 24–48 hours

No

Inpatient clinical evaluation
• Conduct urine toxicology, influenza testing, plus other laboratory and infectious disease testing guided by clinical findings
• Obtain a chest x-ray and consider CT if chest x-ray is normal
• Consider consultation with pulmonary, critical care, medical toxicology, infectious disease, and others
• Additional testing with bronchoalveolar lavage or lung biopsy as clinically indicated, in consultation with pulmonary specialists

Inpatient clinical management
• Discontinue use of e-cigarette, or vaping, products
• Consider empiric use of antibiotics, antivirals, or both, in accordance with established guidelines
• Consider corticosteroids, with timing depending on severity
• Offer or connect patients to services to stop using e-cigarette, or vaping, products
• Ensure follow-up no later than 1–2 weeks after discharge from hospital
• Emphasize importance of routine influenza vaccination

Yes

Outpatient clinical evaluation
• Consider obtaining chest x-ray particularly if indicated by complaints of chest pain, dyspnea, or clinical exam findings
• Consider influenza testing, in accordance with established guidance

Outpatient clinical management
• Manage for possible EVALI
  ○ Advise patient to discontinue use of e-cigarette, or vaping, products
  ○ Use of corticosteroids might worsen respiratory infections and should be considered with caution in the outpatient setting
• Manage other possible infections, if present, in accordance with established guidelines
  ○ Consider early initiation of antivirals for possible influenza
  ○ Consider appropriate antibiotics for community acquired pneumonia
• Offer or connect all patients to services to stop using e-cigarette, or vaping, products
• Ensure follow-up within 24–48 hours; additional follow-up might be indicated, based on clinical findings.
• Emphasize importance of routine influenza vaccination

Abbreviations: CT = computed tomography; EVALI = e-cigarette, or vaping, product use–associated lung injury.
* https://www.cdc.gov/flu/professionals/diagnosis/consider-influenza-testing.htm.
† https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm.
§ https://www.atsjournals.org/doi/full/10.1164/rccm.201908-1581ST#readcube-epdfexternal icon.
¶ https://academic.oup.com/cid/article/68/6/e1/5251935external icon.