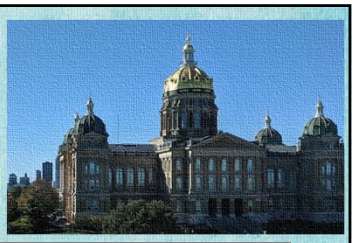
Public Health Update:
Youth E-cigarette Use and EVALI Outbreak



Caitlin S. Pedati MD, MPH, FAAP
Medical Director/State Epidemiologist

IOWA DEPARTMENT OF PUBLIC HEALTH
Protecting and Improving the Health of Iowans

I have no financial conflicts with commercial interest companies to disclose relevant to the content of this educational activity.

Objectives

- Discuss youth vaping epidemic
- Describe epidemiology of EVALI outbreak
- Describe clinical management guidance
- Review sample case
- Describe cessation tools

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E-cigarette Use Among Adolescents

- U.S. Surgeon General issued an Advisory on E-cigarette Use Among Youth
- E-cigarette use has recently surged among youth, fueled by new e-cigarette types that look like a USB flash drive and other shapes
- Ask about e-cigarettes, including small, discreet devices such as JUUL, when screening patients for the use of any tobacco products
- Educate patients about the risks of all forms of tobacco product use, including e-cigarettes, for young people
- For free help, patients can visit smokefree.gov or call 1-800-QUIT-NOW

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E-cigarette, or vaping, products

- Electronic cigarettes — or e-cigarettes — are also called vapes, e-hookahs, vape pens, tank systems, mods, and electronic nicotine delivery systems (ENDS)
- Using an e-cigarette product is commonly called vaping
- E-cigarettes work by heating a liquid to produce an aerosol that users inhale into their lungs
- The liquid can contain: nicotine, tetrahydrocannabinol (THC) and cannabidiol (CBD) oils, and other substances and additives

Patient A - HPI

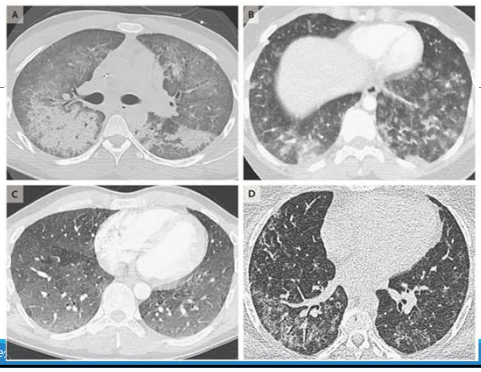
- 16 yo M presents to the emergency room with cough and shortness of breath
- Started about 3 days ago, went to urgent care and as given a Z-pak but it is getting progressively worse
- Also reports some nausea and vomiting about 5 days ago but has a younger sibling in daycare that recently had viral gastroenteritis

Physical Exam

- T 38.1, O2 Sat 98% on RA, BP 132/73 RR 18, HR 68
- A+Ox3
- Cardiac: RRR
- Resp: moderate crackles throughout
- GI: soft, non-tender

Labs

- Na 141
- Cl 102
- K 3.1
- BUN 9
- Cr 0.94
- CO2 24
- WBC 10.8 (87.8% N, 9.4% L, 0% E, 2.6% M, 0.2% B)
- Hgb 12.6
- Hct 38.8
- Plt 316



Prote

Progression

Admitted to medical floor with mIV fluids and broad spectrum antibiotics but has worsening respiratory status over the next 24 hours

What do you want to ask the patient?

Social History

- With mother in room patient denies use of any tobacco, alcohol or illicit substance
- When interviewed alone in ER, patient admits to using friend's nicotine vape pen "one time a couple of days ago in the school bathroom"
- When re-interviewed alone after being admitted, admits to regularly (8 to 10 times a day) using a vape pen with THC cartridges that he got several weeks ago from a "friend of a friend"
- Noted they tasted a little off and recalls the brand name – "Dank"

Progression

Given O2 via NC and then HF but eventually experienced respiratory failure requiring intubation and ICU transfer on day 2

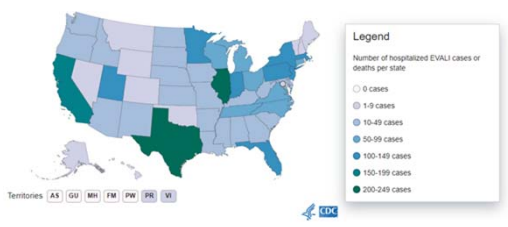
E-cigarette, or vaping, product use associated lung injury (EVALI)

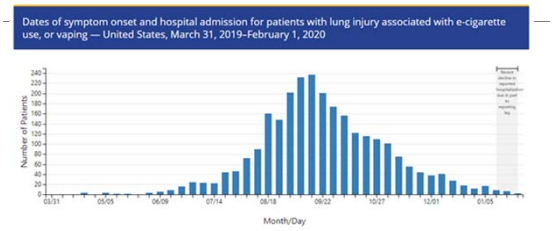
- In August 2019, Wisconsin and Illinois public health and clinical partners issued warnings about severe respiratory illnesses associated with use of e-cigarette, or vaping, products
- Remarkable for clinical severity, noted initially in teenagers and young adults, and without an obvious infectious cause
- Subsequently, CDC, FDA, state and local health departments and clinical partners have been investigating a nationwide outbreak of e-cigarette, or vaping, product use–associated lung injury (EVALI)

E-cigarette, or vaping, product use associated lung injury (EVALI)

- Wide variety of brands and substances and e-cigarette, or vaping, products
- As of February 4, 2020, a total of 2,758 hospitalized EVALI cases have been reported to CDC from all 50 states, the District of Columbia, and two U.S. territories (Puerto Rico and U.S. Virgin Islands)
- Sixty-four deaths have been confirmed in 28 states and the District of Columbia

Number of Hospitalized EVALI Cases or Deaths Reported to CDC as of February 4, 2020





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E-cigarette, or vaping, product use associated lung injury (EVALI)

- Among the 2,668 hospitalized EVALI cases or deaths reported to CDC (as of January 14, 2020)
  - 66% were male
  - Median age was 24 years, range 18 to 85 years
- 2,022 hospitalized patients had data on substance use, of whom (as of January 14, 2020):
  - 82% reported using THC-containing products; 33% reported exclusive use of THC-containing products
  - 57% reported using nicotine-containing products; 14% reported exclusive use of nicotine-containing products

EVALI in Iowa

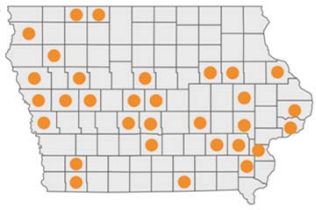
- 60 reported confirmed and probable cases
- 45 (75%) male
- Median age 23, range 15 to 62

- 46 (77%) report vaping THC products
- 18 (30%) report vaping only THC
- 11 (18%) report vaping only nicotine

EVALI in Iowa

- 25 (42%) reporting underlying anxiety or depression
- 52 (87%) hospitalized
- Length of stay ranges from 1 to 21 days
- 13 (22%) required intubation

EVALI Cases in Iowa by County



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EVALI Cases in Iowa by Date of Symptom Onset

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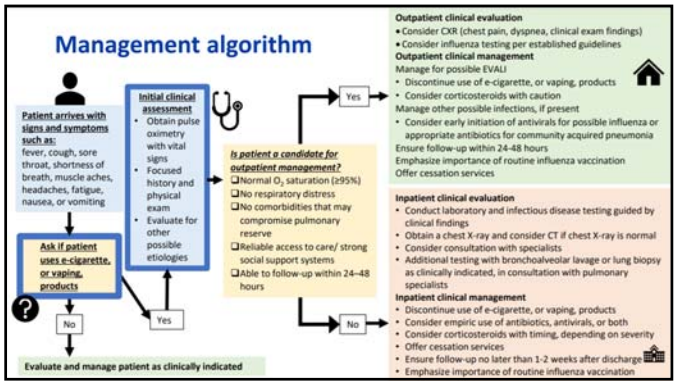
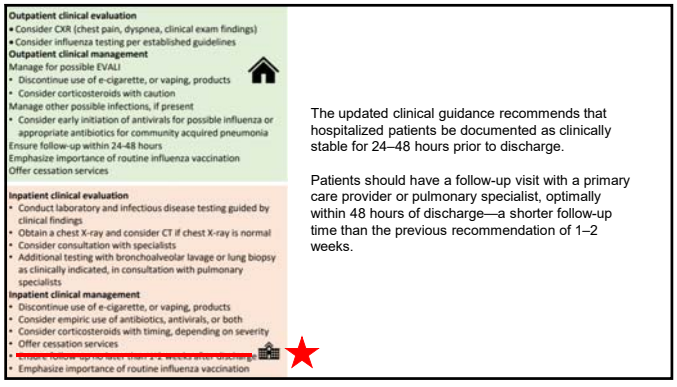
Management of Cases





The updated clinical guidance recommends that hospitalized patients be documented as clinically stable for 24–48 hours prior to discharge.

Patients should have a follow-up visit with a primary care provider or pulmonary specialist, optimally within 48 hours of discharge—a shorter follow-up time than the previous recommendation of 1–2 weeks.

Ask about Use

- **Ask about the use of e-cigarette, or vaping, products and types of substances used**
- Confidentiality is essential especially for young adults and adolescents
- Empathetic, nonjudgmental, and private questioning of patients*
- Continue to ask questions during follow-up encounters

*AAFP Article on Patient-Centered Communication and Interview Tool for Adolescents

Outpatient Clinical Evaluation

- Consider influenza testing
- Consider chest radiograph (CXR), if indicated by
  - Chest pain
  - Dyspnea
  - Clinical exam findings

Outpatient Management: Manage Possible EVALI

- Advise patient to discontinue use of e-cigarette, or vaping, products
  - Some patients have had recurrences with continue use
- Corticosteroids might worsen respiratory infections and should be considered with caution in the outpatient setting
  - Not well studied; consider with caution
  - Might worsen commonly seen respiratory infections
  - Most patients had rapid improvement with corticosteroids
  - Some patients who have not received corticosteroids had clinical improvement with e-cigarette cessation

Blagev DP, Harris D, Dunn AC, Guidry DW, Grissom CK, Lanspa MJ. Clinical presentation, treatment, and short-term outcomes of lung injury associated with e-cigarettes or vaping: a prospective observational cohort study. Lancet 2019;19:32679-0.

Outpatient Management: Manage Other Infections

- Manage other infections, if present, in accordance with established guidelines*
  - Early initiation of antivirals for possible influenza
  - Appropriate antibiotics for community acquired pneumonia

* CDC Summary of Influenza Antiviral Medications; IDSA Clinical Practice Guidelines for Seasonal Influenza; Pneumonia guidelines; Pneumonia guidelines for infants and children

Outpatient Management: Follow-Up Instructions

- Ensure follow-up within 24-48 hours; additional follow-up might be indicated, based on clinical findings
- Patients should return immediately if they develop new or worse respiratory symptoms
- Emphasize importance of routine influenza vaccination

Inpatient Clinical Evaluation

- Urine toxicology, influenza testing, other laboratory and infectious disease testing guided by clinical findings
- Obtain a chest x-ray and consider CT if chest x-ray is normal
- Consultation with pulmonary, critical care, medical toxicology, infectious disease, and others
- Consider bronchoalveolar lavage or lung biopsy as clinically indicated

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 cessation services
- Ensure follow-up no later than ~~1–2 weeks~~ * 48 hours after discharge from hospital
- Emphasize importance of routine influenza vaccination

Blagev DP, Harris D, Dunn AC, Guidry DW, Grissom CK, Lanspa MJ. Clinical presentation, treatment, and short-term outcomes of lung injury associated with e-cigarettes or vaping: a prospective observational cohort study. Lancet 2019;19:32679–0.

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Follow-up From Hospital Admission

- Initial: within ~~1–2 weeks~~ * 48 hours after discharge
  - Repeat pulse-oximetry
  - Consider repeat CXR
- Additional follow-up: 1–2 months after discharge
  - Consider spirometry, diffusion capacity testing, and CXR
- Long-term effects and the risk of recurrence of EVALI are not known
  - Many patients have symptom resolution
  - Some patients relapsed during corticosteroid tapers or with resumption product use
  - Some had hypoxemia requiring home oxygen and pulmonary follow up
  - Some treated with high-dose corticosteroids might require monitoring of adrenal function and endocrinology follow up

Influenza and EVALI

- Influenza cannot be distinguished from EVALI by signs, symptoms, clinical features at presentation, or by testing
  - Acute respiratory illness in a patient with a history of e-cigarette/vaping and THC exposure could be caused by:
    - Influenza viruses
    - Other respiratory infections
    - EVALI
    - All of the above
- Frequency of influenza occurring with EVALI is unknown

CDC Influenza Testing Recommendations

- **Outpatients***
  - Test for influenza if results will change management
  - Rapid molecular assays are recommended over rapid antigen tests
    - Preferred specimens: nasopharyngeal or combined nasal/throat swabs
- **Hospitalized Patients***
  - Use influenza molecular assays
  - Patients with respiratory failure without a diagnosis:
    - Preferred specimens: lower respiratory tract specimens

➢ **Clinicians should interpret negative influenza testing results carefully*

https://www.cdc.gov/flu/professionals/diagnosis/index.htm

Corticosteroids and Influenza

IDSA GUIDELINE

Clinical Practice Guidelines by the Infectious Diseases Society of America: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenza[a]

- The Infectious Diseases Society of America (IDSA) recommends:
  - ➢ ***Clinicians should not administer corticosteroid adjunctive therapy*** for the treatment of adults or children with suspected or confirmed seasonal influenza, influenza-associated pneumonia, respiratory failure, or ARDS, ***unless clinically indicated for other reasons***
- Some observational studies suggest corticosteroid treatment is associated with prolonged influenza viral shedding, increased complications, emergence of antiviral resistance, and secondary bacterial and fungal infections

https://academic.oup.com/cid/article/68/6/e1/5251935 47

Public Health Recommendations

CDC recommends that people do not use THC-containing e-cigarette, or vaping, products

CDC also recommends that people should **not**:

- Buy any type of e-cigarette, or vaping, products, particularly those containing THC from informal sources like friends, or family, or in-person or online dealers
- Modify or add any substances to e-cigarette, or vaping, products that are not intended by the manufacturer, including products purchased through retail establishments

While it appears that vitamin E acetate is associated with EVALI, evidence is not yet sufficient to rule out contribution of other chemicals of concern to EVALI

- Many different substances and product sources are still under investigation, and it may be that there is more than one cause of this outbreak
- The only way to assure that you are not at risk while the investigation continues is to consider refraining from use of all e-cigarette, or vaping, products

Public Health Recommendations

Adults using e-cigarettes to quit smoking should not go back to smoking; they should weigh all risks and benefits and consider utilizing FDA-approved nicotine replacement therapies

Adults who continue to use an e-cigarette, or vaping, product, should carefully monitor themselves for symptoms and see a healthcare provider immediately if they develop symptoms like those reported in this outbreak

Public Health Recommendations

Irrespective of the ongoing investigation:

- E-cigarette, or vaping, products should never be used by youths, young adults, or women who are pregnant
- Adults who do not currently use tobacco products should not start using e-cigarette, or vaping, products; there is no safe tobacco product
- All tobacco products, including e-cigarettes, carry a risk
- THC use has been associated with a wide range of health effects, particularly with prolonged frequent use
- The best way to avoid potentially harmful effects is to not use THC-containing e-cigarette, or vaping, products
- Persons with marijuana use disorder should seek evidence-based treatment by a health care provider

Iowa Reporting Order

Suspected lung injury associated with vaping as a reportable condition

Pursuant to 641 Iowa Administrative Code 1.3 (139A), the director of the Iowa Department of Public Health, temporarily designated suspected lung injury associated with vaping as a reportable disease in Iowa. This designation will begin on December 1, 2019 and remain in place until May 31, 2020.

All Iowa health care providers are required to report within three days any suspected lung injury associated with vaping by phone (1-800-362-2736), Fax (515-281-5698) or mail Iowa Department of Public Health/CADE, Lucas State Office building, 321 East 12th Street, Des Moines, IA 50319-0075 . (641 IAC 1.4(1)"b").

Suspected lung injury associated with vaping as a reportable condition

Report each patient presenting with radiographic evidence of lung injury and history of vaping to IDPH.

The report must include, at a minimum, the following information:

a. The patient's name.
b. The patient's address.
c. The patient's date of birth.
d. The sex of the patient.
e. The patient's telephone number.

Suspected lung injury associated with vaping as a reportable condition

In addition, healthcare providers are asked to fax or secure email copies of the medical chart (hospital or discharge summary or history and physical if patient is still admitted, imaging reports, and laboratory work-up results) pertaining to the current vaping related lung injury to IDPH.

Reports can be submitted via facsimile (515-281-5698), secure email (CADE@idph.iowa.gov), or telephone (800-362-2736).

Pursuant to 641-1.7 (135,139A) Investigation of reportable disease, upon receipt of the report, IDPH epidemiologists or the local public health department may request additional information needed for the investigation.

Patient A: Outcome

- Started on glucocorticoids
- Improves and is extubated 2 days later
- Stable for 48 hours prior to discharge with follow-up appointment in 2 days
- Emphasized need to avoid use of products once out of the hospital

Summary

- Patients may present after failed outpatient antibiotic course for CAP
- Consider EVALI and ask about product use without parents/others present
- Patients have potential to deteriorate quickly and may require respiratory support
- Many patients respond well to steroids but use with caution if infectious etiology is possible
- Follow-up planning and coordination with public health are important

Cessation Tools

Resources for Quitting

- Quitline Iowa is the primary resource in Iowa to help adult tobacco users quit
  - Quitline offers free specialized services:
    - tailored quit plans
    - nicotine replacement therapy
    - 1 on 1 counseling with a Quit Coach
  - Open 24 hours a day, 7 days a week
- 26% of callers to Quitline Iowa have successfully quit

Resources for Quitting

- My Life My Quit - youth tobacco cessation program
  - Targeted to 13-17 year olds
  - Dedicated youth quit coaches
  - Completely anonymous
  - Offers texting program

Brief Tobacco Intervention

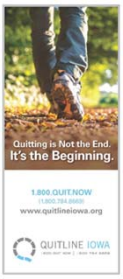
- The brief tobacco Intervention is an approach to address tobacco use with patients and dramatically increases their chances of quitting tobacco
  - 2A's and R Brief Tobacco Intervention:
    - 1. ASK if the patient uses tobacco
    - 2. ADVISE all tobacco user to quit
    - 3. REFER those ready to quit to QUITLINE Iowa

AAR Online Training

Offer 2 free online trainings for physicians
- Quitline 101 - introduction to Quitline
- AAR - motivational interviewing techniques for tobacco
  - receive continuing education credit upon completion

Resources

We offer free resources on our website:
- Quitline Iowa rackcards in english and spanish
- Quit Tip cards
- Tobacco prevention/education brochures
- Cessation kits for providers



EVALI References

CDC
https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html
https://emergency.cdc.gov/coca/calls/2019/callinfo_112119.asp
https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease/healthcare-providers/pdfs/Algorithm-EVALI-Nov-2019.pdf

IDPH
https://idph.iowa.gov/ehi/lung-disease-vaping
https://idph.iowa.gov/tupac/vaping-information
www.mylifemyquit.com

Questions?

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