

# Unanticipated national outbreak: Lung injury related to e-cigarette use

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At the peak of the popularity of e-cigarettes, the nation has found itself in the midst of an epidemic of pulmonary illness associated with the use of e-cigarette products. With some 1,480 cases of lung injury reported in

49 states to the Centers for Disease Control and Prevention (CDC) and 33 deaths confirmed as of October 15, 2019, a widespread ongoing epidemiologic investigation continues. National survey data indicate that the prevalence of e-cigarette use among young adults 18-24 years old rose 46 percent and among high school students the prevalence increased 32 percent in just the past year. A significant increase in initiation of e-cigarette use has been observed among minority youth, particularly among young Hispanics.

Known as "aping," the use of e-cigarettes has been highly marketed as less harmful than traditional cigarettes, convenient and cost-effective. The flavorings added to e-cigarettes—such such cherry, vanilla and coffee, for example—appeal to youngsters, who often do not understand that they are inhaling potentially harmful substances.

"Amazingly, over 60 percent of surveyed teenagers indicated that the liquid and aerosol they were using was 'just flavoring,'" said Anthony J. Kondracki, postdoctoral research associate in the department of epidemiology at FIU's Robert Stempel College of Public Health & Social Work. "The main forces driving youth to vape are peer pressure, because it is 'cool or trendy,' and friends and family are doing it. More than we realize, a rapid escalation in vaping may lead to a future transition to traditional cigarette smoking and marijuana use."

E-cigarette vapor is not safe as it contains nicotine and other toxic substances, such as propylene glycol and/or vegetable glycerin, [volatile organic compounds](#), and metals such as nickel, lead and chromium with a potential to injure the lungs, cardiovascular and nervous system, and cause cancer over a period of time. Because [brain development](#) continues until about age 25, the adolescent brain is particularly susceptible to permanent changes from nicotine use and increasing the risk of nicotine addiction.

"No large clusters of pulmonary illnesses linked to the use of e-cigarette product have been previously reported," Kondracki said. "This is a new phenomenon that is really worrying the [public health](#) sector. We have seen youth and [young adults](#), once presumably healthy, being hospitalized and placed on mechanical ventilation in the intensive care unit as a result of using e-cigarettes."

Early symptoms of acute dyspnea, cough, chest pain, nausea, vomiting, abdominal discomfort, and fever, which worsened over a few days, suggested acute poisoning from inhaled aerosolized substances. About 70 percent of patients were male and younger than 35 years old. Fifteen percent of cases have been individuals younger than 18 years old, raising a concern about their nicotine addiction and future wellbeing.

"It is very sad to see this trend disrupting all the smoking cessation intervention efforts that helped reduce smoking over the past 20 years," Kondracki said. "Of greater concern is that three-quarters of lung injuries occurred in users who inhaled tetrahydrocannabinol, or THC, added to the [e-cigarette](#) device to produce effects one would get from smoking marijuana. These are already dangerous products that can lead to serious health injuries, but by adding THC and other foreign chemicals that are not labeled for this type of consumption, users are putting themselves at even greater risk."

As the count of mystery lung disease linked to vaping continues to grow, regulatory authorities at the federal level are acting to protect public health by calling for changes to the way e-cigarettes are marketed and sold, particularly to young people.

"Some communities have already extended their indoor smoking bans to include e-cigarettes in smoke-free public areas and on school grounds, consequently reducing the appeal of vaping as it becomes less visible," Kondracki said.

Provided by Florida International University

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