



Vaping-related Lung Injury, Utah, 2019: Investigation to Date Updated September 30, 2019

Introduction

As of Monday, September 30, 2019, 71 cases of vaping-related lung injury have been reported to Utah Department of Health (UDOH), with an additional 10 potential cases under review (see Table 1). Given the evidence outlined below, vaping THC cartridges or “carts” is likely the driver of this outbreak of severe lung injury. The UDOH recommends people do not vape THC cartridges until we learn more.

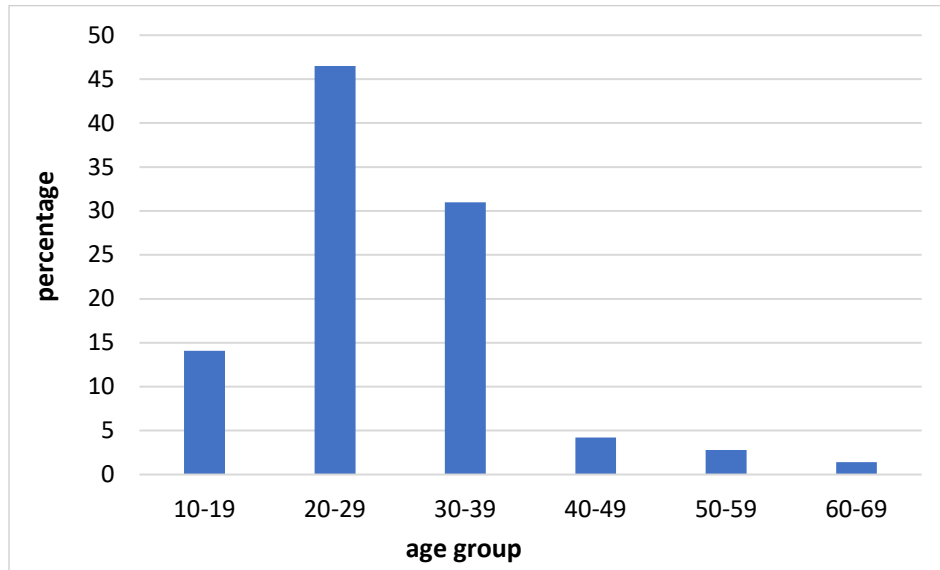
Table 1. Cases by Case Status and Interview Status, Utah Local Health Departments, Utah, 2019

Local Health District	# of Cases	# of Cases Under Review
Salt Lake	39	3
Utah	11	1
Davis	9	0
Weber-Morgan	5	3
Other LHDs	7	3
Total	71	10

Demographics

Men account for 82% of the Utah cases while women account for 18%, which is similar to case demographics seen in other states. Most cases are in their 20s or 30s. The median age in Utah of 26 (range: 14–66) is three years older than the current national median age of 23.

Figure 1. Age Distribution (Age Groups as % of Total), Vaping-related Lung Injury, Utah, 2019



Disease Severity

- 50 confirmed and probable cases had full medical abstractions.
- 36 cases were interviewed for information on symptoms and exposures.
- Medical data was gleaned solely from abstractions; exposure data was gleaned primarily from interviews and secondarily from abstractions.

Among Utah cases, 90% were hospitalized. The median length of hospital stay among those with known discharge dates was six days (range: 1–17 days). More than half of cases were admitted to an intensive care unit (ICU) and many were diagnosed with acute respiratory distress syndrome (ARDS). The majority of cases required breathing assistance during their illness, most through a CPAP or BiPAP mask but some through intubation for ventilator support.

Table 2. Measures of Disease Severity, Vaping-related Lung Injury, Utah, 2019*

Measure	# of Cases	Total Cases	%
Hospitalized	45	50	90
ICU	26	41	63
ARDS	15	35	43
CPAP/BiPAP	25	34	74
Intubated	8	35	23

Exposures and Acquisition

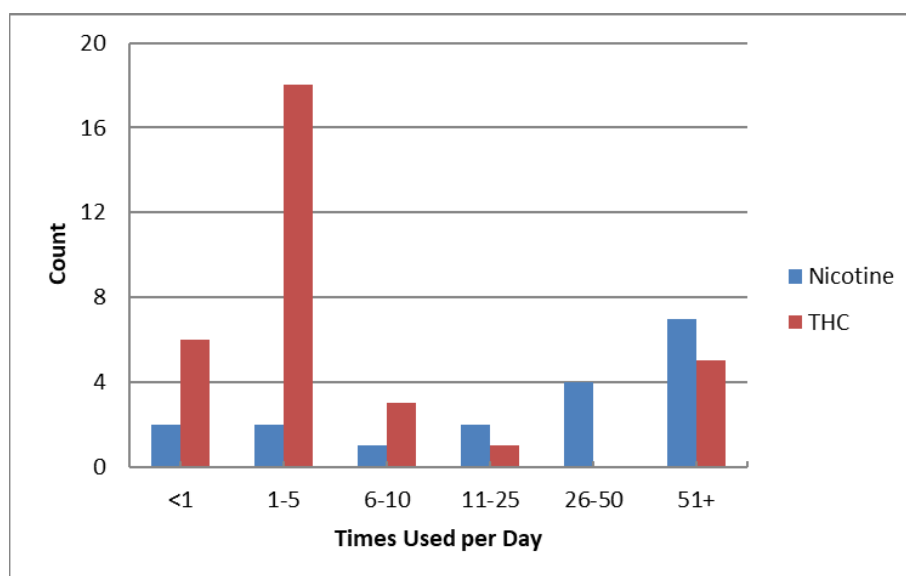
More than 90% of cases self-reported vaping THC cartridges and 63% self-reported vaping nicotine (Table 2). Many cases also self-report vaping both substances (60%). Among those who self-reported vaping only THC or nicotine, more cases vaped only THC cartridges (37%) compared to those who vaped only nicotine.

Table 3. Self-Reported Substances Vaped, Subset of Cases, Vaping-Related Lung Injury, Utah, 2019 (n = 36)

Substance	# of Cases	%
Any THC cartridges	34	94
Any nicotine	23	64
Both THC cartridges and nicotine	21	58
THC only	13	36
Nicotine only	2	6

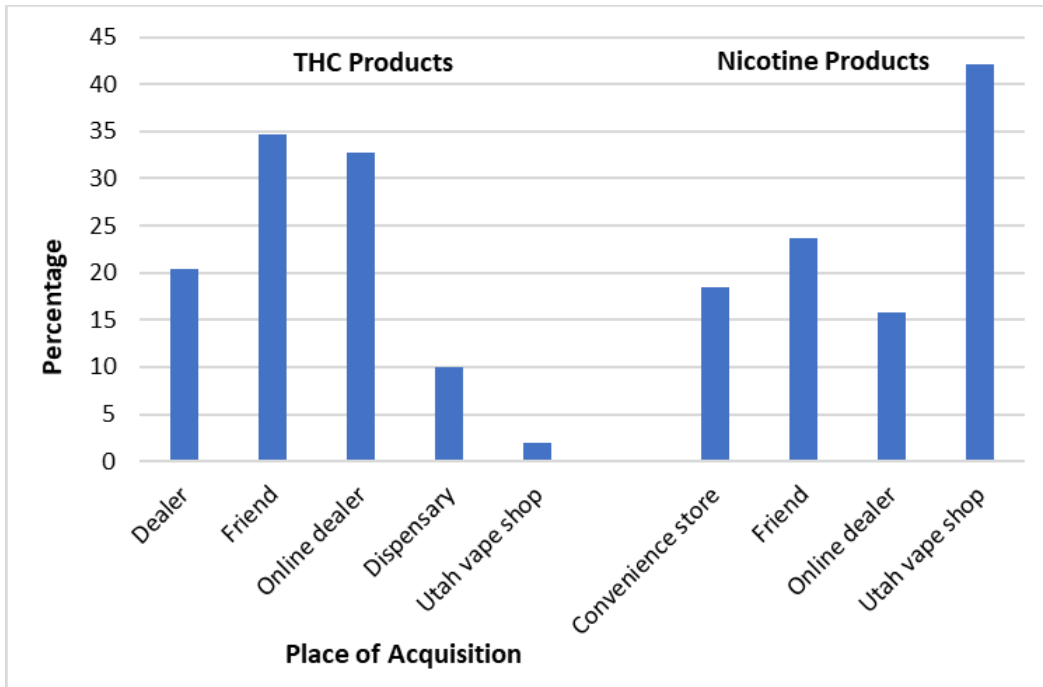
The most commonly self-reported frequency of use for THC products was 1–5 times per day. The most commonly self-reported frequency of use for nicotine products was more than 51 times per day. Several cases also self-reported vaping THC products more than 51 times per day.

Figure 3. Self-Reported Frequency of Use by Product Type (Nicotine and THC), Total Products Used (n=51), Subset of Cases, Vaping-Related Lung Injury, Utah, 2019



Most THC products were acquired through friends (35%), online (33%), and in-person dealers (20%). A few THC products were acquired at out-of-state dispensaries or purchased at vape shops in Utah. Since many patients self-reported the use of multiple products, the UDOH was unable to identify which product or products may have led to illness. Nicotine products were acquired mostly at vape shops in Utah (42%) or from friends (24%), but also at convenience stores and online.

Figure 4. Self-Reported Place Acquired (%), THC Products (n = 49), Nicotine Products (n = 38), and Devices (n = 3), Subset of Cases, Vaping-Related Lung Injury, Utah, 2019



THC cartridges bought off the street often use brand-associated packaging. Four such “brands” each were reported by more than 20% of cases who used THC cartridges. The UDOH cannot determine whether these are legitimate or counterfeit products.

Table 4. Self-Reported “Brands” of THC Cartridges among those who used THC Cartridges, Subset of Cases, Vaping-Related Lung Injury, Utah, 2019 (n = 34)

Substance	# of Cases	%
Dank Vapes	13	38
Rove	12	35
Golden Gorilla	9	26
Smart Cart	7	21

Laboratory Investigation

The UDOH Utah Public Health Laboratory (UPHL) has been working with state and national laboratories to test products used by case patients. Thirty-nine samples were tested at the UPHL for several chemical compounds including illicit drugs (e.g., opioids, fentanyl, and methamphetamines), cutting agents, and biologic toxins. Of the 39 products tested by the UPHL, 19 were THC cartridges and 20 were nicotine e-juices (Table 6). Almost all THC cartridges tested contained vitamin E acetate (17/19, 89%), a known cutting agent. One THC cartridge contained no THC at all. In contrast, no nicotine products tested showed any unexpected compounds.

Table 5. Summary of Case-associated THC and Nicotine Vaping Product Laboratory Results, Vaping-related Lung Injury, Utah, 2019

	Samples tested	Chemical Compounds Identified (% of Total Samples)			
		Nicotine	THC	Vitamin E Acetate	Long-Chain Fatty Acids
THC Cartridges	19	5%	95%	89%	5%
Nicotine	20	100%	0%	0%	0%

Acknowledgements

The UDOH would like to thank staff at each of the Utah local health departments and clinicians within the Intermountain Healthcare and University of Utah health care systems for their help with this investigation. Staff at the Utah Public Health laboratory have also been instrumental in the efficient testing of product samples.