

**Title:** Multi-state Vaping-related Incidents in the Pre-Hospital Setting

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**Introduction:** EMS is at the forefront of many recent health issues including e-cigarette or vaping product use-associated lung injury (EVALI). According to the CDC, over 2,800 EVALI cases have been reported, including 68 deaths<sup>1</sup>, since EVALI was first described during summer of 2019. Little research has been done on vaping-related incidents (VRI) using pre-hospital data, a potentially rich data source for exploring emerging public health problems.

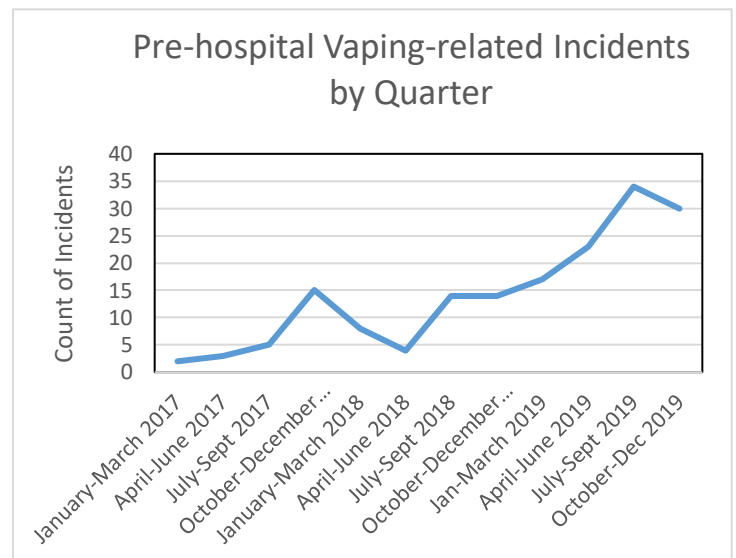
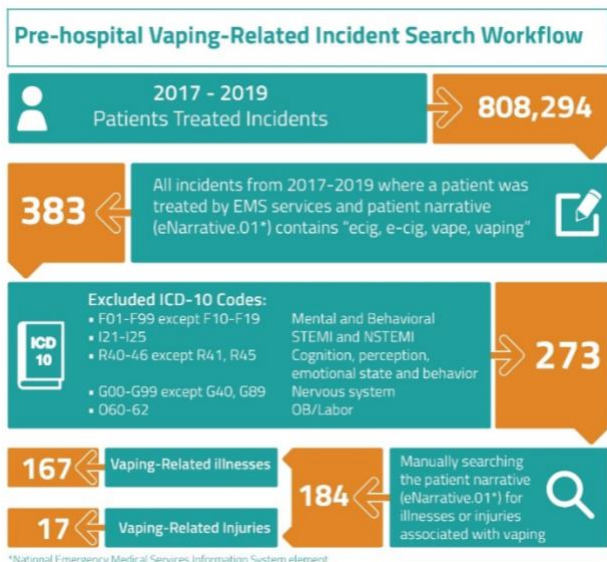
**Objective:** The purpose of this study was to examine the prevalence and characteristics of vaping-related EMS incidents across multiple states.

**Methods:** This retrospective analysis looked at EMS incidents that occurred between January 2017-December 2019 in Montana, Utah, and Wyoming. We selected incidents involving patient contact that included any of the terms “vape”, “vaping”, “ecig”, or “e-cig” in the narrative. Incidents mentioning these terms were excluded if provider impression was clearly unrelated to vaping. The remaining narratives were manually reviewed to classify suspected VRI.

**Results:** There were 185 suspected VRI (90%) illnesses and injuries (10%) in Montana (17%), Utah (74%), and Wyoming (10%) during this timeframe. A majority of incidents were located in an urban setting (77%). Most patients were white (70%), male (60%), and between 11-20 years old (50%). The most common injury mechanisms were exploding devices (53%) and distracted vehicle crashes (24%), while the top VRI categories were overdose (28%), respiratory (17%), and altered mental status (16%). In illness-related incidents, THC was the most common vaped substance (32%), followed nicotine (14%), CBD oil (8%), other substance (4%), and 43% did not specify.

**Conclusion:** While VRI comprise a small percentage of all incidents attended by EMS, there has been a steady increase since 2017. While many incidents did not capture the substances being vaped, there was a large percentage where THC seemed to play a role compared to nicotine, CBD oil or other substances. This result has also been identified by the CDC<sup>1</sup>. In order to identify VRI, a labor intensive method was used which involved manually reviewing each incident narrative. A new standardized ICD-10 code, U070 (Released April 2020), may help capture more incidents, and remove the need to manually review narratives.

1. Centers for Disease Control and Prevention: Office of Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion. Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products. Nov. 27, 2020. [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html)



<sup>1</sup>National Emergency Medical Services Information System element

Table 1. Pre-hospital Vaping-related Incident Descriptives

		Wyoming	Utah	Montana	Total
Incident Type <sup>1</sup>	Illness	14(82%)	125(92%)	28(90%)	167(90%)
	Injury	4(18%)	11(8%)	3(10%)	18(10%)
Gender	Male	12(67%)	85(62%)	15(48%)	112(60%)
	Female	6(33%)	52(38%)	15(48%)	72(39%)
	Unknown	0(0%)	0(0%)	1(3%)	1(1%)
Race	White	13(72%)	95(70%)	22(71%)	130(70%)
	Hispanic or Latino	3(17%)	12(9%)	1(3%)	16(9%)
	Black/African American	2(11%)	4(3%)	0(0%)	6(3%)
	Other	0(0%)	7(5%)	2(7%)	10(5%)
	Not recorded	0(0%)	18(13%)	6(19%)	24(13%)
Patient Age	0-10	1(6%)	4(3%)	0(0%)	5(3%)
	11-20	7(39%)	72(53%)	13(42%)	92(50%)
	21-30	3(17%)	29(21%)	5(16%)	37(20%)
	31-40	4(22%)	8(6%)	3(10%)	15(8%)
	41-50	1(6%)	9(7%)	6(19%)	16(9%)
	51+	2(11%)	13(10%)	4(13%)	19(10%)
	Missing	0(0%)	1(1%)	0(0%)	1(<1%)
	Mean (SD)	28.4 (19.3)	25.0 (14.6)	31.6 (15.7)	26.5 (15.4)
Incident Scene Urbanicity	Urban	9(50%)	120(88%)	13 (42%)	142(77%)
	Suburban	0(0%)	4(3%)	0(0%)	4(2%)
	Rural	6(33%)	8(6%)	13(42%)	27(15%)
	Wilderness	3(17%)	1(1%)	2(7%)	6(3%)
	Unknown	0(0%)	3(2%)	3(10%)	6(3%)
Vaped Substance (Illness Only)	THC	4(29%)	41(33%)	8(29%)	53(32%)
	Nicotine	2(14%)	17(14%)	4(14%)	23(14%)
	CBD	1(7%)	9(7%)	3(11%)	13(8%)
	Other	1(7%)	4(3%)	1(4%)	6(4%)
	Unknown	6(43%)	54(43%)	12(43%)	72(43%)

<sup>1</sup> Determined by ICD-10 Codes