

## **Establishing a Rapid Surveillance Response for E-cigarette, or Vaping, Product Use Associated Lung Injury (EVALI) Using the ToxIC Registry**

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**Background:** Since July 2019, vaping has been linked to thousands of patients with respiratory failure. Data from these cases will broaden our knowledge of this epidemic and could uncover a link to the etiology or provide improved criteria for diagnosis and treatment. With input from the Federal Drug Administration and Centers for Disease Control (CDC), the Toxicology Investigators Consortium (ToxIC) committee created an EVALI form.

**Research Question:** Can an established registry quickly respond to an emerging public health issue?

**Methods:** The EVALI form was incorporated into REDCap on October 10, 2019. Members submitted suspected vaping cases they treated since July 2019 onward. We reviewed cases entered up to November 10, 2019, with focus on demographics, vaping exposure circumstances, diagnostics, management, and outcomes.

**Results:** Eight ToxIC sites entered data on 40 patients from 11 hospitals. All patients were treated by participating medical toxicologists. Ages ranged from 13 to 55 years old (mean 23 years), with 65% males. Of the 37 with complete records, 18 reported only THC vaping, 2 reported only nicotine vaping, 14 reported vaping both, and 3 had unknown vaping history. No prior medical history of heart or lung disease was reported in 80% of cases. Chest X-ray was normal in 8 cases, but of the 35 patients with chest computed tomography (CT), all were abnormal with ground glass opacities in 31 and pneumothoraces in 2. Bronchoalveolar lavage with oil staining found lipid-laden macrophages in 6 cases and none in 3 cases. Intubation was required in 11 cases, and extracorporeal membrane oxygenation in 2. One patient died.

**Conclusion:** We established a surveillance of the EVALI epidemic within a month of the CDC's health advisory release. ToxIC investigators are uniquely positioned to collect clinical bedside data allowing for improved understanding of critical toxicological illnesses.