**States with recreational marijuana have lower rates of vaping associated lung injury**

Coady Wing

Alex Hollingsworth

Ashley Bradford

In the past six months, approximately 1,600 cases of e-cigarette or vaping associated lung injury (EVALI) have been reported to the CDC. The specific exposure that causes EVALI is unknown but most EVALI patients report that they recently used an e-cigarette to consume tetrahydrocannabinol (THC), a psychoactive compound derived from marijuana. The CDC has hypothesized that EVALI may be caused by certain black market THC products.

A number of states have recently legalized marijuana for recreational use, allowing adults to legally purchase products containing THC. In addition, many other states allow for THC to be purchased for qualifying medical purposes. In states that have not adopted these policies, all forms of THC consumption and distribution are illegal. In these prohibition states, those who use THC must obtain it from the black market. If black market THC products are responsible for EVALI then case rates may be lower in recreational marijuana states. To examine this hypothesis, we compared EVALI case rates across states with different marijuana regulations.

We obtained EVALI case data from the CDC and population data from SEER. We classified states as medical marijuana states if they had a medical marijuana law in place in January 2019, but did not have a recreational marijuana dispensary. We classify states as recreational marijuana states if at least one recreational marijuana dispensary was open in the state as of January 1, 2019. The seven recreational marijuana states in our analysis are: Alaska, Washington, Colorado, Oregon, Nevada, California, and Maine.

Figure 1 shows the number of reported EVALI cases per 1 million population in each state. The states are sorted by the EVALI case rate and indicate that recreational marijuana states have a significantly fewer EVALI cases per 1 million than states that do not allow recreational marijuana. The average recreational marijuana state has only 1.7 EVALI cases per 1 million population. This is 7.1 (p < .001 ) lower that the average medical marijuana state, and 6.4 (p -.002) lower than the average prohibition state. The difference in the EVALI case rate between the mean medical and prohibition state is only 0.7 cases per 1 million which is clinically small and statistically insignificant

The distribution of EVALI cases across the states suggests that EVALI cases are concentrated in states where consumers do not have access to a legal recreational marijuana dispensaries. One possible inference is that THC products obtained through the black market may be responsible for EVALI. The results presented here are limited in that they are simple cross-sectional comparisons of case rates. The analysis does not attempt to adjust for the possibility that state marijuana regulations may be confounded by other factors that might explain differences in the prevalence of EVALI.