

Research Shows E-Cigarette Vapor Exposure Amplifies Harmful Inflammatory Response in Influenza A

NOVEMBER 11, 2022

DENVER — Researchers at National Jewish Health have shown that vapor from electronic cigarettes increases small airway inflammation response to influenza A infections. The findings show that short-term exposure of just three days to e-vapor was enough to affect human distal airways. The results were published earlier this year in the *Archives of Toxicology*.



“This is the first evidence that exposure to e-vapor sufficiently impacts the human small airway responses to influenza A virus infection,” said Hong Wei Chu, MD, lead author on the study, and Research Director of the Office of Research Innovation at National Jewish Health.

The small airways are believed to play a significant role in many lung diseases, including chronic obstructive pulmonary disease (COPD), asthma, idiopathic pulmonary fibrosis and sarcoidosis among others. Viral infections, such as influenza, often affect the small airways exacerbating airway obstruction. Patients with additional inflammation of those airways may experience further complications from viral infections.

Researchers in the study isolated primary small airway epithelial cells from donor lungs free of lung disease and exposed them to 15 puffs of e-vapor from a commercially available e-cigarette once per day for three days prior to influenza A infection. After 72 hours of influenza infection the cells were measured for inflammatory and antiviral responses. Pre-exposure to e-vapor with influenza A infection, compared to influenza A infection alone, significantly increased inflammatory and antiviral mediators.

“The results suggest that e-vapor exposure exaggerates human small airway pro-inflammatory response to influenza A infection independent of the cell injury during viral infection,” said Dr. Chu. “These results advance knowledge of the negative health impact that e-cigarette vapor has on human lungs, particularly during the flu season and can be used to design future long-term studies looking at viral infections in people who vape regularly.”

National Jewish Health is the leading respiratory hospital in the nation. Founded 123 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the [media resources page](#).

Media Contacts

Our team is available to arrange interviews, discuss events and story ideas.

Jessica Berry
303.398.1082
berryj@njhealth.org