Loss of taste or smell strongly predicts which health care workers will test positive for COVID-19

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A study by a University at Buffalo investigator sheds new light on the link between early COVID-19 symptoms and eventual positive test

results. The research could lead to new protocols for determining who will be tested and how best to use testing resources.

One compelling finding of the study is that a symptom only recently added to the Centers for Disease Control and Prevention's list of COVID-19 predictors—loss of taste or smell—had the highest level of correlation with an eventual positive test result.

The study, "Symptom Criteria for COVID-19 Testing of Health Care Workers," was authored by Brian Clemency, MD, an associate professor in the Department of Emergency Medicine at the Jacobs School of Medicine and Biomedical Sciences at UB and a physician with UBMD Emergency Medicine. It was published May 12 in the journal Academic Emergency Medicine.

The limited availability of testing resources nationally and a lack of consensus on who should be tested have been major challenges to health care systems. Under-testing of patients with COVID-19 can lead to further spread of the disease. Over-testing of patients who do not have COVID-19 potentially takes time, money and resources away from patients who need them most.

The goal of the UB study was to develop an evidence-based symptom criteria for COVID-19 testing, based on the probability of positive test results, in order to facilitate appropriate use of testing resources.

Little of the existing literature covers ways to identify COVID-19 in people with early or mild symptoms, which constitutes the majority of cases. Clemency's study looks at which COVID-19 symptoms were predictive of positive test results among a group of health care workers tested through the testing program run by Kaleida Health, Western New York's largest health care system.

The research consisted of an observational study of COVID-19 testing of 961 health care workers. They were asked about the presence of 10 symptoms: fever, fatigue, dry cough, loss of appetite, muscle pain, difficulty breathing, coughing up phlegm, sore throat, diarrhea and loss of taste or smell.

Subjects were then tested using nasopharyngeal or oropharyngeal swabs at drive-through testing sites. The symptom data was then compared to test results to find links between specific symptoms and an eventual positive test result. In the test group, 225 subjects—23 percent—had positive COVID-19 test results.

"The data analysis showed that the loss of smell or taste, which has only recently been included in the list of COVID-19 symptoms, was the symptom with the highest likelihood of a positive result," Clemency said, adding that fever was also predictive of positive test results.

Fever or loss of taste or smell was reported by 61 percent of the heath care workers, and 89 percent of the health care workers with positive COVID-19 tests in the study. If a health care worker in the study had neither of these findings, the chance they would test positive for COVID-19 was only 7 percent.

This, Clemency says, indicates that "an evidence-based approach to COVID-19 testing which at least includes fever and loss of taste or smell should be utilized when determining which health care workers should be tested."

The data in the study were collected from the Kaleida Heath system in Western New York between March 26 and April 16. According to the Erie County Department of Health, on March 26 the county had 166 confirmed cases of COVID-19 and 2 confirmed deaths. Three weeks later, when the study ended, the county had 1,951 confirmed cases and

115 confirmed deaths.

"When adequate testing resources are available, a testing criteria based on fever, cough difficulty breathing and/or loss of taste or smell is a reasonable approach, and is superior to a testing criteria based on only fever, cough and/or difficulty breathing," Clemency writes. "When testing resources are limited, a strategy of testing based on fever and/or loss of taste or smell should be considered."

More information: Brian M Clemency et al. Symptom Criteria for COVID-19 Testing of Heath Care Workers, *Academic Emergency Medicine* (2020). DOI: 10.1111/acem.14009

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