

Miller School Research Reveals that Flu Shot Protects Against Severe Effects of COVID-19

In a newly published study, physician-scientists at the University of Miami Miller School of Medicine have shown that the flu vaccine may provide vital protection against COVID-19.



From left, senior study author and Chief of Plastic Surgery Devinder Singh, M.D., with lead authors: medical student Susan M. Taghioff and plastic surgery resident Benjamin R. Slavin, M.D.

The study, titled “Examining the potential benefits of the influenza vaccine against SARS-CoV-2: A retrospective cohort analysis of 74,754 patients,” was published in the peer-

reviewed scientific journal *PLoS One* on August 3. This was the largest study of its kind and analyzed deidentified patient records from around the world, which strongly suggested that the annual flu shot reduces the risks of stroke, sepsis, and DVT in patients with COVID-19. Patients with COVID-19 who had been vaccinated against the flu were also significantly less likely to visit the emergency department and be admitted to the intensive care unit.

“Only a small fraction of the world has been fully vaccinated against COVID-19 to date, and with all the devastation that has occurred due to the pandemic, the global community still needs to find solutions to reduce morbidity and mortality,” said senior study author Devinder Singh, M.D., chief of plastic surgery, and professor of clinical surgery at the Miller School.

“Having access to the real-time data of millions of patients is an incredibly powerful research tool,” added Dr. Singh, who conducted the study with medical student Susan Taghioff and plastic surgery resident Benjamin Slavin, M.D., both of whom were lead authors. “Together with asking important questions, my team has been able to observe an association between the flu vaccine and reduced morbidity in COVID-19 patients.”

Sharing Findings with Scientists and General Public

The researchers previously presented their preliminary data findings at the European Congress of Clinical Microbiology & Infectious Diseases (ECCMID), receiving international attention. Now that the full study has been published, the authors are extremely excited to share their detailed findings for the first time with both the general public and scientific

community.

The study was conducted using patient records from a number of countries, including the U.S., the U.K., Germany, Italy, Israel and Singapore. The team screened de-identified electronic health records on the TriNetX research database for more than 70 million patients to identify two groups of 37,377 patients. The two patient groups were then matched for factors that could influence their risk of susceptibility to severe COVID-19, including but not limited to age, gender, ethnicity, smoking, and health problems such as diabetes, obesity, and chronic obstructive pulmonary disease.

Members of the first study group had received the flu vaccine two weeks and six months prior to being diagnosed with COVID-19. Those in the second group also had a positive COVID-19 diagnosis but were not vaccinated against the flu. The incidence of 15 adverse outcomes (sepsis; strokes; deep vein thrombosis or DVT; pulmonary embolism; acute respiratory failure; acute respiratory distress syndrome; arthralgia or joint pain; renal failure; anorexia; heart attack; pneumonia; emergency department visits; hospital admission; ICU admission; and death) within 30, 60, 90 and 120 days of testing positive for COVID-19 were then compared between the two groups.

The analysis revealed that those who had not had the flu shot were significantly more likely (up to 20% more likely) to have been admitted to the ICU. They were also significantly more likely to visit the emergency department (up to 58% more likely), to develop sepsis (up to 45% more likely), to have a stroke (up to 58% more likely) and a DVT (up to 40% more

likely). The risk of death was not reduced.

Avoiding Adverse Outcomes

The investigators were also able to calculate how many COVID-19-positive patients would need to receive an influenza vaccine to avoid one adverse outcome. Notably, they found that only 176 patients needed to have received a flu vaccine to prevent one ED visit within 120 days of testing positive for COVID-19. Additionally, only 286 patients needed to have received their flu vaccine to prevent one case of sepsis, which is known to be the most expensive condition to treat in the U.S. health care system. Last, for every 440 patients who were up to date on their flu shot, one ICU admission was prevented.

Although it isn't exactly known yet how the flu vaccine provides protection against COVID-19, most theories speculate that the flu shot may boost the innate immune system – general defenses we are born with that do not protect against any one specific illness.

The results, said study authors, strongly suggest that the flu vaccine may protect against several severe effects of COVID-19. However, they strongly recommend that people receive COVID-19 vaccines as well their annual influenza vaccine. They add that more research, in the form of prospective randomized control trials, is needed to prove and better understand the possible link but, in the future, the flu shot could be used to help provide increased protection in countries where the COVID-19 vaccine is in short supply or even aid in the ongoing struggle against breakthrough cases in those individuals already vaccinated against COVID-19.

“Continued promotion of the influenza vaccine also has the potential help the global population avoid a possible ‘twindemic’ – a simultaneous outbreak of both influenza and coronavirus,” Taghioff said. “Regardless of the degree of protection afforded by the influenza vaccine against adverse outcomes associated with COVID-19, simply being able to conserve global health care resources by keeping the number of influenza cases under control is reason enough to champion continued efforts to promote influenza vaccination worldwide.”

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