

# Flu shots may cut risk of blood clots forming in veins

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Flu shots may reduce the risk of blood clots forming in veins by 26 percent, according to research presented at the American Heart Association's Scientific Sessions 2008.

"Our study suggests for the first time that vaccination against influenza may reduce the risk of venous thrombotic embolism (VTE)," said Joseph Emmerich, M.D., Ph.D., lead author of the study and professor of vascular medicine at the University Paris Descartes and head of the INSERM Lab 765, which investigates thrombosis. "This protective effect was more pronounced before the age of 52 years."

VTE is the formation of a blood clot in a vein. The condition is dangerous because the blood clot can break loose and travel through the circulatory system to the right side of the heart. From there it can go to the lungs (a pulmonary embolism), which can be life-threatening or even fatal.

Researchers conducted a case-control study among 1,454 age- and sex-matched patients (average age 52 years) from 11 centers in France (the FARIVE study). They compared 727 patients without personal history of cancer within the last five years who had initial episodes of VTE to a control group of age- and sex-matched patients free of venous and arterial thrombotic disease.

Patients younger than 18 years old — or those who already had VTE, had a diagnosis of active cancer or a history of malignancy less than five years previously, or had a short life expectancy due to other causes — were ineligible to participate in the study.

Potential control subjects with cancer, liver or kidney failure, or a history of venous and/or arterial thrombotic disease were also ineligible.

Researchers interviewed patients using a standardized questionnaire covering age,

educational level, medication history, personal and familial history of thrombotic disease, and acquired risk factors for VTE, including pregnancy, use of oral contraceptives or estrogen replacement therapy, trauma or surgery less than three months previously, prolonged immobilization, or travel lasting more than five hours.

Patients were classified as having secondary (provoked) VTE if they had one or more of the above acquired risk factors. All other patients were considered to have had unprovoked episodes of VTE.

Influenza vaccination status during the previous 12 months was also recorded. The outcomes of the cases, documented through half-yearly telephone interviews for five years, include:

- Overall, the adjusted odds risk was 26 percent less for developing VTE after having the flu shot.
- The flu shot's protective effect was more pronounced before rather than after age 52 years, with a 48 percent lower likelihood of VTE in those younger than 52.
- In women under 51 years, getting the flu shot reduced the odds of developing VTE by 50 percent, and by 59 percent for women taking oral contraceptives.
- The protective effect of vaccination was similar for different types of VTE (deep vein thrombosis or pulmonary embolism).

The mechanism underlying the link between influenza virus infection and the risk of VTE is still unclear, Emmerich said.

"Infections in general increase blood viscosity, and systemic inflammatory reactions to infectious agents can themselves trigger a thrombotic process," he said. "However, influenza vaccination might lower the risk of thrombosis in other ways, as suggested by the even distribution of VTE events across the 12 months of the year in both vaccinated

and unvaccinated cases in our study."

Further studies are needed to confirm this relationship between influenza vaccination and VTE, and to explore the underlying mechanisms. It raises the possibility that flu vaccination could be recommended after a first VTE event, Emmerich said.

The American Heart Association recommends heart patients get annual flu shots to protect against this infectious disease. Patients with cardiovascular disease are more likely to die from influenza than patients with any other chronic condition. However, patients with cardiovascular disease should not get the nasal-spray flu vaccine.

Source: American Heart Association

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