Flu At@Glance®

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19. Influenza and pneumococcal vaccination and risk of stroke or transient ischaemic attack-matched case control study.


Abstract:

BACKGROUND: Evidence that respiratory infections trigger stroke suggests that influenza or pneumococcal vaccination might prevent stroke. We aimed to investigate whether influenza or pneumococcal vaccination or both together were associated with reduced risk of stroke or transient ischaemic attack (TIA).

METHODS: We used a matched 1:1 case-control design with data from the United Kingdom General Practice Research Database. Cases, aged 18 years or above with stroke (fatal or non-fatal) and TIA during September 2001 to August 2009, were compared with controls matched for age, sex, calendar time and practice, adjusting for cardiovascular risk factors, vaccine risk groups, comorbidity and indicators of functional ability.

RESULTS: We included 26,784 cases of stroke and 20,227 cases of TIA with equal numbers of matched controls. Influenza vaccination within-season was associated with 24% reduction in stroke risk (adjusted OR 0.76, 95% CI 0.72 to 0.80) but no reduction in TIA (1.03, 0.98 to 1.09). Stroke risk was significantly lower with early (September to mid-November: 0.74, 0.70 to 0.78) but not later influenza vaccination (mid-November onwards: 0.92, 0.83 to 1.01). Associations persisted after multiple imputation of missing data and sensitivity analysis for unmeasured confounders. Pneumococcal vaccination was not associated with a reduction in risk of stroke (0.98, 0.94 to 1.00) or TIA (1.15, 1.08 to 1.23).

CONCLUSIONS: Influenza vaccination was associated with a 24% reduction in risk of stroke but not TIA. Pneumococcal vaccination was not associated with reduced risk of stroke or TIA. This has important implications for potential benefits of influenza vaccine.


Abstract:

BACKGROUND: Abundant, indirect epidemiological evidence indicates that influenza contributes to all-cause mortality and cardiovascular hospitalisations with studies showing increases in acute myocardial infarction (AMI) and death during the influenza season.

OBJECTIVE: To investigate whether influenza is a significant and unrecognised underlying precipitant of AMI.

DESIGN: Case-control study.


PATIENTS: Cases were inpatients with AMI and controls were outpatients without AMI at a hospital in Sydney, Australia.

MAIN OUTCOME MEASURES: Primary outcome was laboratory evidence of influenza. Secondary outcome was baseline self-reported acute respiratory tract infection.

RESULTS: Of 559 participants, 34/275 (12.4%) cases and 19/284 (6.7%) controls had influenza (OR 1.97, 95% CI 1.09 to 3.54); half were vaccinated. None were recognised as having influenza during their clinical encounter. After adjustment, influenza infection was no longer a significant predictor of recent AMI. However, influenza vaccination was significantly protective (OR 0.55, 95% CI 0.35 to 0.85), with a vaccine effectiveness of 45% (95% CI 15% to 65%).

CONCLUSIONS: Recent influenza infection was an unrecognised comorbidity in almost 10% of hospital patients. Influenza did not predict AMI, but vaccination was significantly protective but underused. The potential population health impact of influenza vaccination, particularly in the age group 50-64 years, who are at risk for AMI but not targeted for vaccination, should be further explored. Our data should inform vaccination policy and cardiologists should be aware of missed opportunities to vaccinate individuals with ischaemic heart disease against influenza.


Abstract:

IMPORTANCE: Among nontraditional cardiovascular risk factors, recent influenzalike infection is associated with fatal and nonfatal atherothrombotic events.

OBJECTIVES: To determine if influenza vaccination is associated with prevention of cardiovascular events.

DATA SOURCES AND STUDY SELECTION: A systematic review and meta-analysis of MEDLINE (1946-August 2013), EMBASE (1947-August 2013), and the Cochrane Library Central Register of Controlled Trials (inception-August 2013) for randomized clinical trials (RCTs) comparing influenza vaccine vs placebo or control in patients at high risk of cardiovascular disease, reporting cardiovascular outcomes either as efficacy or safety events.

DATA EXTRACTION AND SYNTHESIS: Two investigators extracted data independently on trial design, baseline characteristics, outcomes, and safety events from published manuscripts and unpublished supplemental data. High-quality studies were considered those that described an appropriate method of randomization, allocation concealment, blinding, and completeness of follow-up.

MAIN OUTCOMES AND MEASURES: Random-effects Mantel-Haenszel risk ratios (RRs) and 95% CIs were derived for composite cardiovascular events, cardiovascular mortality, all-cause mortality, and individual cardiovascular events. Analyses were stratified by subgroups of patients with and without a history of acute coronary syndrome (ACS) within 1 year of randomization.

RESULTS: Five published and 1 unpublished randomized clinical trials of 6735 patients (mean age, 67 years; 51.3% women; 36.2% with a cardiac history; mean follow-up time, 7.9 months) were included. Influenza vaccine was associated with a lower risk of composite cardiovascular events (2.9% vs 4.7%; RR, 0.64 [95% CI, 0.48-0.86]; P = .003) in published trials. A treatment interaction was detected between patients with (RR, 0.45 [95% CI, 0.32-0.63]) and without (RR, 0.94 [95% CI, 0.55-1.61]) recent ACS (P for interaction = .02). Results were similar with the addition of unpublished data.

CONCLUSIONS AND RELEVANCE: In a meta-analysis of RCTs, the use of influenza vaccine was associated with a lower risk of major adverse cardiovascular events. The greatest treatment effect was seen among the highest-risk patients with more active coronary disease. A large, adequately powered, multicenter trial is warranted to address these findings and assess individual cardiovascular end points.

22. A review of the indirect protection of younger children and the elderly through a mass influenza vaccination program in Japan.

Abstract:
In the past, Japan's strategy for controlling influenza was to vaccinate schoolchildren based on the theory that this could reduce influenza epidemics in the community, and a special program to vaccinate schoolchildren against influenza was begun in 1962. However, the program was discontinued in 1994 because of lack of evidence that it had limited the spread of influenza in the community. In 2001, it was reported that a clear decrease in excess mortality had coincided with the timing of the schoolchild vaccination program. This decrease could have potentially occurred because elderly people were protected by herd immunity generated by the program. Moreover, the program protected the younger siblings of schoolchildren against influenza-associated encephalopathy. Finally, the program was effective in reducing the number of class cancellations and absenteeism from school. During the period when the program was in effect, Japanese schoolchildren served as a barrier against influenza in the community.

23. The Japanese experience with vaccinating schoolchildren against influenza.

Abstract:
BACKGROUND: Influenza epidemics lead to increased mortality, principally among elderly persons and others at high risk, and in most developed countries, influenza-control efforts focus on the vaccination of this group. Japan, however, once based its policy for the control of influenza on the vaccination of schoolchildren. From 1962 to 1987, most Japanese schoolchildren were vaccinated against influenza. For more than a decade, vaccination was mandatory, but the laws were relaxed in 1987 and repealed in 1994; subsequently, vaccination rates dropped to low levels. If most schoolchildren were vaccinated, it is possible that herd immunity against influenza was achieved in Japan. If this was the case, both the incidence of influenza and mortality attributed to influenza should have been reduced among older persons.

METHODS: We analyzed the monthly rates of death from all causes and death attributed to pneumonia and influenza, as well as census data and statistics on the rates of vaccination for both Japan and the United States from 1949 through 1998. For each winter, we estimated the number of deaths per month in excess of a base-line level, defined as the average death rate in November.

RESULTS: The excess mortality from pneumonia and influenza and that from all causes were highly correlated in each country. In the United States, these rates were nearly constant over time. With the initiation of the vaccination program for schoolchildren in Japan, excess mortality rates dropped from values three to four times those in the United States to values similar to those in the United States. The vaccination of Japanese children prevented about 37,000 to 49,000 deaths per year, or about 1 death for every 420 children vaccinated. As the vaccination of schoolchildren was discontinued, the excess mortality rates in Japan increased.

CONCLUSIONS: The effect of influenza on mortality is much greater in Japan than in the United States and can be measured about equally well in terms of deaths from all causes and deaths attributed to pneumonia or influenza. Vaccinating schoolchildren against influenza provides protection and reduces mortality from influenza among older persons.
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