

Do yearly flu shots increase the risk of getting the flu?

The benefit of annual flu shots was questioned in a recent CTV television feature. (1) The topic was based on a study published in July, 2016 by a Canadian research group headed by Dr. Danuta Skowronski from the British Columbia Centre for Disease Control, University of British Columbia, Vancouver.(2)

Using a case control study design and data from Canada's Sentinel Practitioner Surveillance Network (SPSN) for the 2014-2015 influenza season, Dr. Skowronski's group reported that study participants who received the 2014–2015 vaccine without vaccination the year before had significant protection against influenza A(H3N2) but those who had received the identical 2013-2014 vaccine the previous year had no increased protection and those who were vaccinated three years in a row actually had an increased risk of contracting influenza compared with unvaccinated participants. According to expert reviewers from the US Centers for Disease Control and Prevention's (CDC's) Influenza Vaccine Effectiveness Network and the Group Health Research Institute in Seattle, the research in this study was well done (3); however the study was observational in nature, therefore the role of chance, bias and confounding in the results cannot be ruled out (2).

This is not the first study to find an association between previous vaccination and reduced vaccine effectiveness.(2) Computer modelling from over a decade ago predicted that a sequence of influenza vaccines with identical or very similar strains might result in loss of vaccine effectiveness because antibodies from the previous year could bind with antigen in the next injection thereby limiting the immune response from the current injection and at the same time depleting the supply of antibodies available to fight the influenza virus.(4) The risk would be exacerbated if there was also a mismatch between the vaccine and current circulating influenza strain (4), as was the situation in 2014-2015. Dr. Skowronski speculates these factors may have been responsible for the lack of vaccine effectiveness demonstrated in her study.(2)

Dr. Skowronski cautions that no immediate changes should be made to vaccination policies and programs in reaction to this study. (1,2) The National Advisory Committee on Immunization is aware of these studies but their expert opinion is that annual immunization is the optimal protection against influenza season after season.(5) In a recent communication addressing this issue, the Saskatchewan Chief Medical Health Officer stated "At this point there is no evidence to suggest that persons at higher risk of influenza should not get an influenza vaccine every year".(6) Further research on this issue is underway in Canada and several other countries.

For this year, the H3N2 component in the influenza vaccine is different than that used last year (Hong Kong vs. Switzerland) (6) and early indications are that it is a good match for the influenza virus currently circulating (7). If the model discussed above is reliable, the protective effect of vaccination should be high for this flu season regardless of previous vaccine exposure.

Bottom line: Until further notice, continue to recommend an annual flu shot for everyone especially for those at higher risk: older than 65 years of age, between 6 months and 5 years of age, underlying heart conditions, or pregnant.

References:

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