Influenza Vaccination and Risk of Subsequent Non-Influenza Respiratory Viruses: Safety

This report was published on June 8, 2020
To produce this report, CADTH used a modified approach to the selection, appraisal, and synthesis of the evidence to meet decision-making needs during the COVID-19 pandemic. Care has been taken to ensure the information is accurate and complete, but it should be noted that international scientific evidence about COVID-19 is changing and growing rapidly.
**Authors:** Christopher Freige, Suzanne McCormack

**Cite As:** Influenza Vaccination and Risk of Subsequent Non-Influenza Respiratory Viruses: Safety. Ottawa: CADTH; 2020 Jun. (CADTH Reference List).

**Disclaimer:** The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners’ own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein do not necessarily reflect the views of Health Canada, Canada’s provincial or territorial governments, other CADTH funders, or any third-party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user’s own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian Copyright Act and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

**About CADTH:** CADTH is an independent, not-for-profit organization responsible for providing Canada’s health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

**Funding:** CADTH receives funding from Canada’s federal, provincial, and territorial governments, with the exception of Quebec.

Questions or requests for information about this report can be directed to requests@cadth.ca.
Research Question

What is the safety of influenza vaccination with respect to risk of subsequent non-influenza respiratory viruses?

Key Findings

Three non-randomized studies were identified regarding the safety of influenza vaccination with respect to risk of subsequent non-influenza respiratory viruses.

Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine’s MeSH (Medical Subject Headings), and keywords. The main search concepts were the influenza vaccine and non-influenza respiratory viruses, as well as a targeted search for virus interference. Search filters were applied to limit retrieval of the main search to safety data. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2015 and May 25, 2020. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Individuals of all ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>Influenza vaccine (e.g., inactivated influenza vaccine, live attenuated influenza vaccine)</td>
</tr>
<tr>
<td>Comparators</td>
<td>No influenza vaccine; placebo</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Incidence of other non-influenza respiratory viruses (e.g., coronavirus, rhinovirus, Middle East respiratory syndrome, severe acute respiratory syndrome)</td>
</tr>
<tr>
<td>Study Designs</td>
<td>Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies</td>
</tr>
</tbody>
</table>

Results

Three non-randomized studies\textsuperscript{1-3} were identified regarding the safety of influenza vaccination with respect to risk of subsequent non-influenza respiratory viruses. No relevant health technology assessments, systematic reviews or randomized controlled trials were identified.

References of potential interest that did not meet the inclusion criteria are provided in the appendix.
Overall Summary of Findings

Three non-randomized studies\textsuperscript{1-3} were identified regarding the safety of influenza vaccination with respect to risk of subsequent non-influenza respiratory viruses. The study by Wolff\textsuperscript{1} investigated whether receiving an influenza vaccine increased the risk of contracting other respiratory viruses in Department of Defense personnel, which was referred to as virus interference. There was no statistically significant difference in the odds of contracting non-influenza respiratory viruses between vaccinated and non-vaccinated patients.\textsuperscript{1} As such, the author concluded that receiving the influenza vaccine was not associated with virus interference.\textsuperscript{1} The second study by Rikin et al.,\textsuperscript{2} investigated whether receiving an influenza vaccine increased the rate of laboratory confirmed acute respiratory illness in the subsequent post-vaccination time period. The authors found that during the 14-day post-influenza vaccination time period, the hazard of contracting non-influenza respiratory pathogens was higher compared to unvaccinated individuals during the same time period.\textsuperscript{2} When stratified by age, the hazard remained higher for children, but not for adults.\textsuperscript{2} The authors thus concluded that there was an increased hazard of non-influenza, acute, viral respiratory illness among children in the post-vaccination period compared to unvaccinated children during the same time period.\textsuperscript{2} The third study by Feng et al.,\textsuperscript{3} investigated the potential for virus interference using data from the Influenza Incidence Surveillance Project in the US. After the three-year observational period, the authors found no associations between the detection of non-influenza, respiratory viruses and receiving an influenza vaccination.\textsuperscript{3}

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-Analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies


Appendix — Further Information

Systematic Reviews and Meta-Analyses

Alternative Outcome


Randomized Controlled Trials

Viral Respiratory Illness Not Specified


Alternative Outcome


Published Outside of Literature Search Timeframe


Non-Randomized Studies

Viral Respiratory Illness Not Specified


### Additional References


See: “Is it true that getting a flu vaccine can make you more susceptible to other respiratory viruses?”