

## Influenza vaccination for healthcare workers who work with the elderly: Evidence and implications for public health

### Review on which this evidence summary is based:

Thomas, R.E., Jefferson, T., & Lasserson, T. (2010). **Influenza vaccination for healthcare workers who work with the elderly**. *Cochrane Database of Systematic Reviews, Issue 2*, Art. No.: CD005187. DOI: 10.1002/14651858.CD005187.pub3.

*Note: The Cochrane review that this evidence summary is based on has been updated. This evidence summary summarizes the above-cited version of this review, not the updated version. An updated evidence summary will be provided as soon as possible.*

### Review Focus

- P** Healthcare workers caring for elderly patients (aged  $\geq 60$  years) in long-term care facilities or hospitals.
- I** Vaccination of healthcare workers with any influenza vaccine given alone or with other vaccines.
- C** Placebo or no intervention.
- O** *Primary Outcomes (for elderly adults):* 1) influenza; 2) hospital admission for influenza; 3) deaths caused by influenza or its complications.  
*Secondary Outcomes:* 1) influenza-like illness (ILI) during the epidemic period; 2) ILI admissions; 3) deaths (all causes)

**Review Quality Rating:** 10 (strong) *Details on the methodological quality are available [here](#).*

### Considerations for Public Health Practice

Conclusions from Health Evidence	General Implications
<p>This high quality review is based on studies of weak methodological quality.</p> <p>Among vaccinated and/or unvaccinated elderly patients, vaccination of healthcare workers (HCWs) reduced:</p> <ul style="list-style-type: none"> <li>cases of, and GP consultations for, ILI</li> <li>deaths from all causes</li> </ul> <p>Among vaccinated and/or unvaccinated elderly patients, vaccination of healthcare workers did <i>not</i> reduce:</p> <ul style="list-style-type: none"> <li>laboratory-confirmed influenza incidence</li> <li>pneumonia incidence</li> <li>deaths from pneumonia, or ILI</li> <li>lower respiratory tract infection incidence</li> <li>admissions to hospital</li> </ul> <p>Only the <i>adjusted</i> estimates of effects are reported, which provide a more conservative estimate of impact. While the current evidence indicates HCW vaccination achieves at best, little impact on many important outcomes, the available evidence is very limited in both quantity and quality.</p>	<p>Limited evidence suggests that public health <i>should</i> promote influenza vaccination of HCWs to reduce:</p> <ul style="list-style-type: none"> <li>cases of ILI among elderly patients</li> <li>GP consultations for ILI</li> <li>deaths from all causes among elderly patients</li> </ul> <p>But, <i>should not</i> rely on influenza vaccination of HCWs to reduce:</p> <ul style="list-style-type: none"> <li>laboratory-proven influenza incidence</li> <li>pneumonia incidence</li> <li>deaths from pneumonia</li> <li>deaths from ILI</li> <li>lower respiratory tract infections</li> <li>admissions to hospital</li> </ul> <p>Public health decision makers should be aware that for a number of interventions, very limited evidence, of poor quality, is available to inform decision making. As such, results of this review should be applied cautiously to public health practice, and if applied to practice rigorous evaluation is needed.</p>

### Evidence and Implications

What's the evidence?	Implications for practice and policy
<p><b>1. Influenza Incidence (2 studies)</b></p> <ul style="list-style-type: none"> <li><u>No impact</u> with HCW influenza vaccination on vaccinated and/or unvaccinated (elderly) patients</li> </ul>	<p><b>1. Influenza Incidence</b></p> <ul style="list-style-type: none"> <li>Limited evidence suggests that public health decision makers should not advocate influenza vaccination of HCWs to reduce influenza among elderly patients.</li> </ul>

<p><b>2. Pneumonia Incidence (1 study)</b></p> <ul style="list-style-type: none"> <li>• <u>No impact</u> with HCW influenza vaccination on vaccinated and/or unvaccinated elderly patients compared to no intervention.</li> </ul>	<p><b>2. Pneumonia Incidence</b></p> <ul style="list-style-type: none"> <li>• Public health should not promote influenza vaccination of HCWs to reduce pneumonia rates among elderly patients; however, the findings are limited to a single study.</li> </ul>
<p><b>3. Pneumonia Mortality (2 studies)</b></p> <ul style="list-style-type: none"> <li>• <u>No impact</u> with HCW influenza vaccination on vaccinated and/or unvaccinated elderly patients compared to no intervention.</li> </ul>	<p><b>3. Pneumonia Mortality</b></p> <ul style="list-style-type: none"> <li>• Public health decision makers should not promote influenza vaccination of HCWs to reduce deaths from pneumonia among elderly patients.</li> </ul>
<p><b>4. Influenza-like Illness (ILI) (3 studies)</b> <i>Vaccinated and unvaccinated elderly patients</i></p> <ul style="list-style-type: none"> <li>• HCW influenza vaccination resulted in a statistically significant reduction in the risk of ILI by 28% (<b>RR 0.72</b>, 95%CI 0.58 to 0.89) (2 studies).</li> </ul> <p><u>No impact</u> when vaccinated and unvaccinated patients were assessed separately (1 study).</p>	<p><b>4. Influenza-like Illness (ILI)</b></p> <ul style="list-style-type: none"> <li>• Public health decision makers can support influenza vaccination of HCWs to reduce the risk of ILI in a combination of vaccinated and unvaccinated elderly patients.</li> </ul>
<p><b>5. GP Consultations for ILI (1 study)</b></p> <ul style="list-style-type: none"> <li>• Vaccination of HCWs resulted in a statistically significant reduction in the odds of both vaccinated and unvaccinated patients seeking medical consultation for ILI (<b>OR 0.48</b>, 95% CI 0.33 to 0.69) compared to no intervention.</li> </ul>	<p><b>5. Consultations for ILI</b></p> <ul style="list-style-type: none"> <li>• Public health decision makers can support influenza vaccination of HCWs to reduce medical consultations for ILI among elderly patients, while acknowledging the findings are limited to a single study.</li> </ul>
<p><b>6. Deaths from ILI (1 study)</b></p> <ul style="list-style-type: none"> <li>• <u>No impact</u> on both vaccinated and unvaccinated (elderly) patients with HCW influenza vaccination compared to no intervention</li> </ul>	<p><b>6. Deaths from ILI</b></p> <ul style="list-style-type: none"> <li>• Public health should not advocate for influenza vaccination of HCWs to reduce deaths from ILI in elderly patients.</li> </ul>
<p><b>7. Hospital Admissions (2 studies)</b></p> <ul style="list-style-type: none"> <li>• <u>No impact</u> on both vaccinated and unvaccinated (elderly) patients with HCW influenza vaccination compared to no intervention</li> </ul>	<p><b>7. Hospital Admissions</b></p> <ul style="list-style-type: none"> <li>• Public health decision makers should not rely on influenza vaccination of HCWs to reduce hospital admissions among elderly patients.</li> </ul>
<p><b>8. Deaths from All Causes (4 studies)</b> <i>Vaccinated and unvaccinated patients</i></p> <ul style="list-style-type: none"> <li>• Influenza vaccination of HCWs resulted in a statistically significant reduction in the odds of death from all causes (<b>OR 0.70</b>, 95%CI 0.55 to 0.89) compared to no intervention (3 studies).</li> </ul> <p><u>No impact</u> when vaccinated and unvaccinated patients were assessed separately (1 study).</p>	<p><b>8. Deaths from All Causes</b></p> <ul style="list-style-type: none"> <li>• Public health decision makers can support influenza vaccination of HCWs to reduce the odds of death overall among both vaccinated and unvaccinated elderly patients.</li> </ul>
<p><b>Legend:</b> P – Population; I – Intervention; C – Comparison group; O – Outcomes; CI – Confidence Interval; OR – Odds Ratio; RR – Relative Risk  **For definitions see the health-evidence.ca glossary <a href="http://www.healthevidence.org/glossary.aspx">http://www.healthevidence.org/glossary.aspx</a></p>	

### Why this issue is of interest to public health in Canada

Reducing incidence of influenza is a Canadian public health priority. Approximately 5-10% of Canadians get “the flu” each year and, while most healthy adults recover completely, up to 20 000 are hospitalized<sup>1</sup> and about 4,000 to 8,000 Canadians, mostly seniors, die annually as a result.<sup>1-2</sup> Older Canadians are at greater risk of serious infections, complications, hospitalization, and death.<sup>1</sup> Among the elderly, vaccination is thought to reduce influenza-related morbidity by 60% and influenza-related mortality by 80%.<sup>3</sup> Most reported outbreaks of influenza occur in long-term care facilities. Among elderly residents in long-term care facilities, the efficacy of the vaccine in preventing any respiratory illness due to influenza is approximately 20%–40%; however, the vaccine is potentially 80% effective in preventing influenza-related death.<sup>4</sup> Healthcare workers often transmit influenza in these facilities and, thus are a target for prevention efforts. In addition to the human costs of influenza there are associated costs to health care and other systems such as increased general practice consultations and hospital admissions.<sup>3</sup> The cost of the influenza vaccine per life year saved for older adults is less than \$0, with \$45 saved per each dollar spent.<sup>5</sup>

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2. Stevenson, C.G., McArthur, M.A., Naus, M., Abraham, E., & McGreer, A. J. (2001). Prevention of influenza and pneumococcal pneumonia in Canadian long-term care facilities: How are we doing? *CMAJ*, 164(10), 1413-1419.
3. World Health Organization (2009). *Influenza overview*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs211/en/>
4. Fiore, A. E., Shay, D. K., Haber, P., Iskander, J. K., Uyeki, T. M., Mootrey, G., Bresee, J. S., Cox, N. J. (2007). Prevention and control of influenza recommendations of the Advisory Committee on Immunization Practices (ACIP), 2007. *Morbidity and Mortality Weekly Report*, 56(RR-6). Retrieved from <http://www.cdc.gov/mmwr/PDF/rr/rr5606.pdf>
- 5.

5. Public Health Agency of Canada. (2007). *Vaccine-preventable diseases: Influenza*. Retrieved from [http://www.phac-aspc.gc.ca/im/vpd-mev/influenza\\_e.html](http://www.phac-aspc.gc.ca/im/vpd-mev/influenza_e.html)

**Other quality reviews on this topic are available on [www.health-evidence.ca](http://www.health-evidence.ca)**

### **Suggested citation**

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McRae, L., Graham, K., Tirilis, D., & Dobbins, M. (2012). *Influenza vaccination for healthcare workers who work with the elderly: Evidence and implications for public health*. Hamilton, ON: McMaster University. Retrieved from [http://www.health-evidence.org/documents/byid/16385/Thomas2010\\_EvidenceSummary\\_EN.pdf](http://www.health-evidence.org/documents/byid/16385/Thomas2010_EvidenceSummary_EN.pdf)

*This evidence summary was written to condense the work of the authors of the review referenced on page one. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself. The opinion and ideas contained in this document are those of the evidence summary author(s) and health-evidence.ca. They do not necessarily reflect or represent the views of the author's employer or other contracting organizations. Links from this site to other sites are presented as a convenience to health-evidence.ca internet users. Health-evidence.ca does not endorse nor accept any responsibility for the content found at these sites. The production of this evidence summary was funded with support from the Public Health Agency of Canada. The views expressed herein do not necessarily represent the views of the Public Health Agency of Canada.*