Systematic Review of Cost-effectiveness Analyses on U.S. Adult Vaccines

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Abstract

The adult vaccine schedule provides recommendations on the use of vaccines to reduce the burden of vaccine-preventable diseases among U.S. adults $\geq$19 years. Coverage levels among many vaccines recommended for U.S. adults $\geq$19 years remain lower than childhood vaccine coverage levels and remain below targets set by Healthy People 2020.\textsuperscript{1} The cost-effectiveness research literature on adult vaccines has not been synthesized in recent years, which may contribute to low awareness of the value of adult vaccines and may contribute to under-utilization of adult vaccines. This study conducted a systematic review of the research literature since 1980. We identified 1,688 records from the systematic search. After removing duplicates and off-topic studies, we identified 143 papers for full-text review related to influenza (42), Tdap (16), zoster (7), pneumococcal (26), hepatitis B (17), human papillomavirus (24), and multiple vaccines (11). Preliminary results suggest cost-effectiveness studies consistently found positive economic value associated with adult vaccinations.

Introduction

A recent study by CDC concluded that coverage for all U.S. adult vaccines remains low\textsuperscript{1}. Lower vaccination coverage rates could be due to the perceived clinical and economic value of adult vaccines held by providers or by patients. This study seeks to survey, understand, and summarize the cost-effectiveness literature on adult vaccinations.

Preliminary results (study in progress)

- Several studies of adult influenza and pneumococcal vaccinations identify economic values that are considered cost-saving, which indicates the use of vaccines confer greater or equivalent health outcomes with lower costs.
- The majority of studies across all adult vaccines appear to identify economic values that would likely be considered cost-effective.
- Among adults, lower cost-effectiveness ratios have been associated with certain high-risk populations, such as the elderly (influenza and pneumococcal), immunocompromised (pneumococcal), and pregnant women (influenza).

Table 1. Summary of cost-savings and cost-effectiveness results from systematic review

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Summary information</th>
<th>Cost-savings results</th>
<th>Cost-effectiveness results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of studies</td>
<td>Relevant outcomes (max 3 per study)</td>
<td>Outcomes as S or S/QALY</td>
</tr>
<tr>
<td>Influenza</td>
<td>22</td>
<td>43</td>
<td>39</td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>29</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>Human papillomavirus</td>
<td>6</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Zoster</td>
<td>7</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

*Assessment of Tdap, hepatitis B, and multiple vaccine studies are in progress. QALY=quality-adjusted life-year; CER=cost-effectiveness ratio; Pneum=pneumococcal; Tdap=tetanus, diphtheria, and acellular pertussis; HPV=human papillomavirus; Hep B=hepatitis B.*

Conclusions & Discussion

- Preliminary results found that the majority of economic studies of influenza, pneumococcal, human papillomavirus, and zoster vaccination of adults reported cost-effectiveness ratios (CERs) ≤ $100,000/QALY.
- Many influenza and pneumococcal vaccination studies reported cost-savings.
- Efforts are needed to improve providers, payers and healthcare systems awareness regarding the value provided by adult vaccinations.

References


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