Influenza vaccination: health impact and cost effectiveness among adults aged 50 to 64 and 65 and older


Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to examine the costs and cost-effectiveness of influenza vaccination in people aged 50 years and over, with separate estimates for those aged 50 to 64 and those aged 65 and older. The authors concluded that influenza vaccination was cost-effective for all these age ranges. Overall, the quality of the methodology was good and the results were presented clearly. The authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to examine the costs and cost-effectiveness of influenza vaccination in individuals aged 50 years and older. The two age ranges analysed separately were 50 to 64 years and 65 years and older.

Interventions
This study examined a national programme of influenza vaccination in people aged 50 to 64 years and those aged at least 50 years. These strategies were compared with the current practice which recommends vaccination of people aged 65 years and over.

Location/setting
USA/primary care.

Methods
Analytical approach:
This study updated a previous analytic model, which was described elsewhere. The study population comprised a one-year birth cohort of four million Americans. The time horizon of the analysis was the lifetime. The authors stated that the perspective was societal.

Effectiveness data:
The effectiveness data were obtained from a variety of published studies and details of these sources were reported. The main effectiveness estimates were the vaccine efficacy in preventing influenza-related deaths, influenza-like illness and hospitalisations for influenza and pneumonia.

Monetary benefit and utility valuations:
Not reported.

Measure of benefit:
The measure of benefit was quality-adjusted life-years (QALYs). Details of the method used to estimate the QALYs were reported elsewhere. The future health benefits were discounted at an annual rate of 3%.

Cost data:
The costs were those of the vaccine, hospitalisations, outpatient visits, and patient time and travel costs. The cost data were obtained from published sources. All costs were expressed in price year 2000 US dollars ($) and were discounted at an annual rate of 3%.
Analysis of uncertainty:
A series of one-way and multi-way sensitivity analyses were performed by varying the main model input parameters such as the mortality, vaccine efficacy in preventing deaths, adherence, and average life expectancy gained per death prevented. The ranges of most of the inputs used in the sensitivity analyses came from the literature.

Results
By offering the annual national influenza vaccination to adults aged 50 and over, 274,881 QALYs were saved. Of these, 220,466 were saved by vaccination of those aged 65 and older and 54,415 by those aged 50 to 64.

The net cost per person vaccinated was $15.64 for those aged 50 and older, $28.44 for those aged 50 to 64, and $4.00 for those aged 65 and over. When only medical costs were included, the programme saved $5.52 for a person aged 50 or older and $17.16 for a person aged 65 or older, and decreased the cost to $7.28 per person aged between 50 and 64.

The cost-effectiveness ratio was $5,858 in people aged 50 and older, $28,044 in those aged 50 to 64, and $980 in those aged 65 and older, per QALY saved. When only medical costs were included, the ratio for persons aged 50 to 64 was $7,182 per QALY saved.

The sensitivity analyses revealed that these model outcomes were sensitive to the mortality, vaccine efficacy in preventing death, adherence, and average life expectancy gained per death prevented.

Authors’ conclusions
The authors concluded that influenza vaccination was cost-effective for adults aged from 50 to 64, as well as for those aged 65 and older.

CRD commentary
Interventions:
The interventions were clearly described. The selection of the comparator was appropriate in that it reflected the current pattern of practice in the USA.

Effectiveness/benefits:
The authors appear to have conducted a systematic review of the literature in order to derive the clinical estimates, and this was an appropriate approach as it allowed all the available relevant evidence to be captured. In addition, the search methods, inclusion and exclusion criteria and details of those studies included were clearly reported. Using QALYs as the benefit measure was appropriate as they can be compared with the benefits of other health care interventions. The utility values used in the model and their sources were clearly reported, but no details were provided on the methods used to measure the utilities.

Costs:
The costs appeared to reflect the perspective stated. A breakdown of the cost categories was given, but the resource quantities and unit costs were not presented separately which will make it difficult to replicate the analysis for other settings. The key sources of the cost data were clearly reported. The price year was reported, which will facilitate reflation exercises for other time periods.

Analysis and results:
No details of the model were provided. Nevertheless, the authors conducted an appropriate incremental analysis, and the results were fully and clearly presented. A sensitivity analysis was properly conducted in order to assess whether the results were robust. The authors provided a thorough discussion on the limitations and weaknesses of their study.

Concluding remarks:
Overall, the quality of the methodology was good and the results were presented clearly. The authors’ conclusions appear to be appropriate.

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**Other publications of related interest**


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