



<b>Title</b>	<b>A Systematic Review and Economic Decision Modeling for the Prevention and Treatment of Influenza A and B</b>
<b>Agency</b>	NCCHTA, National Coordinating Centre for Health Technology Assessment Mailpoint 728, Boldrewood, University of Southampton, Southampton SO16 7PX, United Kingdom; Tel: +44 2380 595586, Fax: +44 2380 595639
<b>Reference</b>	Health Technol Assess 2003;7(35). Nov 2003. <a href="http://www.ncchta.org/execsumm/summ735.htm">www.ncchta.org/execsumm/summ735.htm</a>

## Aim

To establish the clinical and cost effectiveness of amantadine, oseltamivir, and zanamivir compared to standard care for treating and preventing influenza.

## Conclusions and results

The systematic review of treating influenza found that oseltamivir reduced the median duration of symptoms in the influenza-positive group by 1.38 days for the otherwise healthy adult population, 0.5 day for the high-risk population, and 1.5 days for the child population. This compared to 1.26 days, 1.99 days, and 1.3 for the similar groups for inhaled zanamivir. The systematic review on preventing influenza found the relative risk reduction to be approximately between 75% and 90% for oseltamivir and 70% and 90% for inhaled zanamivir, depending on the strategy and population. For the economic model, a base case was constructed that focused on the benefits of shortening the influenza illness. This base case found that, compared to standard care, the estimated range in cost per quality-adjusted life year (QALY) was £6,190 to £31,529 for healthy adults, £4,535 to £22,502 for the 'high-risk' group, £6,117 to £30,825 for children, and £5,057 to £21,781 for elderly in residential care. We also conducted a sensitivity analysis that involved extrapolating the observed reductions in pneumonia in the NI trials to hospitalizations and deaths. In all four models the cost effectiveness of NIs is substantially improved by this extrapolation.

## Recommendations

Cost effectiveness varies markedly between the intervention strategies and target populations. The estimate of cost effectiveness is sensitive to variations in key parameters of the model, eg, the proportion of all influenza-like illnesses that are influenza. The effectiveness literature used in the economic decision model spans many decades, and caution should be exercised when interpreting the results of indirect intervention comparisons from the model.

## Methods

A systematic review and meta-analysis of evidence from randomized trials investigated the effectiveness of oseltamivir and zanamivir compared to standard care in treating and preventing influenza A and B. An additional systematic review investigated the effectiveness of amantadine in treating and preventing influenza A in children and the elderly. Economic decision models were constructed to examine the cost effectiveness and cost utility of the alternative strategies for treating and preventing influenza A and/or B.

## Further research/reviews required

Randomized trials that directly compare the two NI drugs and with amantadine would help identify the most appropriate drug treatment. Evidence is needed on the effectiveness of NIs in treating 'high-risk' individuals and on the effectiveness of NIs in preventing influenza in elderly residential care settings. There is insufficient evidence on the effectiveness of antiviral drugs in decreasing hospitalizations and deaths. These events are rare and this information is most likely to be obtained from observational studies. There is a need for high quality-of-life data for estimating utilities in cost per QALY studies. Appraisal and development of rapid diagnostic testing is needed to evaluate this technique alongside antiviral drugs.