Cost-effectiveness of palivizumab against respiratory syncytial viral infection in high-risk children in Austria

Resch B, Gusenleitner W, Nuijten M J, Lebmeier M, Wittenberg W

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 assess the cost effectiveness of palivizumab, a monoclonal antibody, against severe respiratory syncytial viral infection, in high-risk infants in Austria. The authors concluded that the use of palivizumab was cost-effective compared with no palivizumab in high-risk infants and children in Austria. The methodology of the study appears to have been appropriate and, on the whole, was clearly reported. The conclusions reached by the authors appear to be appropriate.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective was to assess the cost effectiveness of palivizumab, a monoclonal antibody, against severe respiratory syncytial virus (RSV) infection, in high-risk infants in Austria.

Interventions
Palivizumab was administered as a monthly intramuscular injection as prophylaxis for RSV infection in at-risk children over the winter and spring season. Children at risk were defined as: infants born at under 35 weeks' gestation and under six months old at the onset of the RSV season; children under two years old requiring treatment for bronchopulmonary dysplasia (BPD) within the past six months; and children under two years old with hemodynamically significant congenital heart disease (CHD).

Location/setting
Austria/secondary care.

Methods
Analytical approach:
A decision tree model was developed to estimate the cost-effectiveness of palivizumab against RSV. The time horizon of the analysis was lifetime. The authors reported that two study perspectives were considered, that of the Austrian national health insurer and a societal perspective.

Effectiveness data:
The effectiveness data were generally derived from international published literature and palivizumab clinical trial data. A large, known, multinational clinical trial was used for some of the effectiveness estimates. Authors' assumptions were used in some estimates on life expectancy after RSV hospitalisation given the lack of available clinical data. The main clinical parameters were the probability of hospitalisation and mortality, and life expectancy in the three populations under consideration.

Monetary benefit and utility valuations:
The health state utilities were based on a published study which used the Health Utilities Index to determine health utilities in children with a history of RSV infection.

Measure of benefit:
The primary measures of benefit were life-years gained and quality-adjusted life-years gained. Future health benefits
were discounted at an annual rate of 5%.

Cost data:
The cost categories were drug costs, paediatrician visits and hospital stay. For the analysis conducted from the societal perspective, the loss of future productivity was also included. A wide variety of sources were used for the resource and cost data. Health care resource utilisation was based on the published literature and resource use observed in palivizumab clinical trials. Data sources specific to Austria were used for the estimates of the cost data. The price year was 2006 and costs were reported in Euros (EUR). A discount rate of 5% was applied to future costs.

Analysis of uncertainty:
Uncertainty in model parameters was explored through one-way sensitivity, probabilistic sensitivity and scenario analyses. The results of the uncertainty analyses were presented as cost-effectiveness acceptability curves.

Results
From the health insurance fund perspective, including the costs associated with asthma, the incremental cost-effectiveness ratio or cost per quality-adjusted life-year (QALY) gained, without discounting, was estimated to be EUR 4,484 in preterm infants, EUR 6,719 in children with BPD, and EUR 2,668 in the CHD population. When discounted, these figures increased to EUR 14,439, EUR 21,672, and EUR 9,754, respectively.

The results from the societal perspective were substantially more cost-effective in all populations. The undiscounted cost per QALY was EUR 1,435 in preterm infants, EUR 4,881 in children with BPD, and EUR 251 in the CHD group. Discounted figures were EUR 4,623, EUR 15,741, and EUR 917, respectively.

The results were sensitive to changes in the discount rate, but were otherwise generally robust.

Authors’ conclusions
The authors concluded that the use of palivizumab was cost-effective compared with no palivizumab in high-risk infants and children in Austria.

CRD commentary
Interventions:
The interventions were clearly reported, including dosage. The study was thorough in the coverage of the interventions in the setting.

Effectiveness/benefits:
The effectiveness data were generally derived from published studies, which in some cases were supplemented by authors’ assumptions. The methods of the literature review were not reported, which makes it impossible to determine if the best available evidence was used. However, some of the hospitalisation and mortality estimates were provided by one large, multinational clinical trial, which should give them a high degree of internal validity. Overall, the effectiveness parameters included in the model were well reported. The derivation of the utility values was clearly described and appears to have been appropriate.

Costs:
The relevant cost categories appear to have been included for both perspectives. Health care resource utilisation data were obtained from published studies and were generally well reported. Unit costs were presented, which will help when replicating the analysis in other settings. The price year and discounting were reported, which will assist in reflation exercises for other time periods.

Analysis and results:
The model structure was presented graphically along with all relevant details and modelling assumptions. An appropriate incremental analysis was undertaken and the results were fully and clearly presented. The impact of uncertainty was largely addressed through several forms of sensitivity analysis, enhancing the generalisability of the study findings.
Concluding remarks:
The methodology of the study appears to have been appropriate and, on the whole, was clearly reported. The conclusions reached by the authors appear to be appropriate.

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