Partially hydrolysed 100% whey-based infant formula and the prevention of atopic dermatitis: comparative pharmacoeconomic analyses

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 whey-based partially hydrolysed infant formula, in the prevention of atopic dermatitis in children aged newborn to three years, who were at risk of developing it. The authors concluded that the partially hydrolysed formula was a cost-effective alternative to standard formula, in healthy at-risk infants. There were some limitations in the reporting of the study methods and it is not clear if the authors' conclusions are appropriate.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to assess the cost-effectiveness of whey-based partially hydrolysed infant formula for the prevention of atopic dermatitis in children aged newborn to three years, who were at risk of developing it.

Interventions
Partially hydrolysed formula was compared with standard cow's milk formula, in every country except Denmark, where it was compared with whey-based extensively hydrolysed formula.

Location/setting
France, Spain, Germany, Switzerland, and Denmark/primary and secondary care.

Methods
Analytical approach:
A decision-tree model was developed to combine published effectiveness data. The time horizon was twelve months. The authors stated that three perspectives were adopted: those of the public health care system, family and society.

Effectiveness data:
The principal effectiveness estimate was the relative risk of atopic dermatitis. The effectiveness of partially hydrolysed formula, compared with standard formula, was from a meta-analysis of randomised controlled trials. Its effectiveness compared with extensively-hydrolysed formula, was assumed to be zero, as no statistically significant difference was found; this was varied in the sensitivity analyses.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The summary measure of benefit was the number of avoided cases of atopic dermatitis.

Cost data:
The economic analysis considered the costs of the formula, medications, medical visits, and laboratory tests that were paid by the Ministry of Health or the family. The travel and time, and lost productivity costs of the family were also considered. The resource use estimates were based on the opinion of experts in each country. Those costs incurred beyond one year were discounted.
Analysis of uncertainty:
One-way sensitivity analysis was carried out on the key inputs, including the rate of infants who were at risk, the severity of atopic dermatitis and the cost estimates. Monte Carlo simulation was used to examine the uncertainty in the model outputs by varying all the input parameters simultaneously.

Results
Compared with standard formula, the number of avoided cases of atopic dermatitis with partially hydrolysed formula was estimated to be 13,356 in France, 6,964 in Spain, 10,238 in Germany and 1,653 in Switzerland. The additional cost from a societal perspective was EUR 9,602,815 in France, -EUR 587,489 in Spain (a saving), -EUR 3,276,383 in Germany and -EUR 2,016,021 in Switzerland.

The incremental cost per case of atopic dermatitis avoided, from the societal perspective, was EUR 719 in France, -EUR 84 in Spain, -EUR 320 in Germany and -EUR 1,220 in Switzerland.

The sensitivity analysis showed that the partially hydrolysed formula was cost-effective, compared with standard formula, in between 45% and 92% of simulations, depending on the country.

Authors' conclusions
The authors concluded that whey-based partially hydrolysed infant formula was a cost-effective alternative to standard formula for preventing atopic dermatitis in healthy at-risk infants.

CRD commentary
Interventions:
The rationale for the selection of the comparators was clear - they were the comparators in a number of recent European studies.

Effectiveness/benefits:
It was not clear if a systematic review was completed to identify the relevant clinical evidence, so it is unclear if the most relevant evidence was used. Few details of the sources for the evidence were provided making it difficult to comment on their validity. In general, the clinical data were poorly reported, with few estimates provided. The outcome measure was appropriate for the treatment, but it was disease specific and will not allow easy comparisons with other diseases.

Costs:
The perspectives were stated and the relevant costs for each perspective appear to have been included. Generally, the costs were poorly reported, reducing the transparency of the analysis. For example, the sources for the cost estimates were not described; the unit cost and resource use estimates were not reported; and the authors stated that the costs beyond one year were discounted, but did not report the discount rates.

Analysis and results:
An appropriate incremental analysis was used to combine the costs and benefits of the treatment options. Valid approaches were used to investigate uncertainty in the model inputs and outputs. Shortcomings in the reporting of the analysis make it difficult to determine if the results are generalisable to other settings.

Concluding remarks:
There were some limitations in the reporting of the study methods and it is not clear if the authors' conclusions are appropriate.

Funding
Funded by the Nestle Nutrition Institute.

Bibliographic details
analyses. Annals of Nutrition and Metabolism 2011; 59(Supplement1): 44-52

PubMedID
22189255

DOI
10.1159/000334232

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Cost Savings; Dermatitis, Atopic /economics /epidemiology /immunology /prevention & control; Europe /epidemiology; Humans; Hydrolysis; Infant; Infant Formula /chemistry /economics; Infant, Newborn; Milk Proteins /administration & dosage /economics; Protein Hydrolysates /administration & dosage; Risk Factors; Whey Proteins

AccessionNumber
22012000566

Date bibliographic record published
09/03/2012

Date abstract record published
30/11/2012