Medico-economic evaluation of an educational intervention to optimize children uncomplicated nasopharyngitis treatment in ambulatory care

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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.

Health technology
Educational intervention aimed at general practitioners (GPs) and parents in the treatment of acute nasopharyngitis in children aged under ten. The educational intervention contained educational material for the doctor and the parents concerning the pathology, symptoms and evolution of nasopharyngitis, as well as information on the ineffectiveness of antibiotics, techniques for nose blowing and cleaning, treatment of symptoms, usual time for remission of symptoms and the reasons for follow-up consultations.

Type of intervention
Educational intervention aimed at modifying choice of treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The original patient population consisted of children under the age of seven with acute uncomplicated nasopharyngitis since seven days maximum and who had not been treated with antibiotics. The patient population was later extended to include patients under the age of ten with acute uncomplicated nasopharyngitis since nine days maximum and not treated with antibiotics. Nasopharyngitis was defined as being present when the following four symptoms occurred: nasal blockage, rhinorrhea, fever and coughing. Patients were excluded from the study if other ear, nose or throat infections were present, if the patient had already consulted a doctor for this episode and had received treatment, if the patient was taking antibiotics or if other contextual factors were incompatible with participation in the study. The mean (SD) age of the participants was 2.5 (1.8) years old.

Setting
The setting was primary care. The economic study was carried out in France.

Dates to which data relate
Effectiveness and resource use data were collected in 1998. The price year was 1999.

Source of effectiveness data
The evidence/estimate for final outcomes was derived from a single study.

Link between effectiveness and cost data
The costing was conducted prospectively on the same patient sample as that used for the effectiveness study.
Study sample
Power calculations were not reported. 1,116 doctors (703 GPs and 413 paediatricians) participated in the study and were randomised to one of the two arms of the study (educational intervention or conventional treatment). Each doctor had to include 3 to 5 consecutive patients who qualified for participation. The initial study sample was appropriate for the clinical study question. 3,764 patients were included in the study with 1,957 (52%) children included in the educational intervention arm and 1,807 (48%) children included in the conventional treatment arm. The percentage of patients who refused to participate was not reported. The percentage of patients excluded from the initial sample was not reported.

Study design
The study design was a randomised controlled trial, with the doctors being randomised to each intervention. The method of randomisation was not reported. Stratification by category of doctor (GP or specialist) was not conducted. The study took place in multiple practices. The duration of follow-up of the patients was seven days. Losses to follow-up were 4.4% of the original sample. The breakdown by arm was not reported. Blinding for assessment of outcomes was not reported.

Analysis of effectiveness
The basis for the analysis of the clinical study (intention to treat or treatment completers only) was not stated. The primary health outcomes used in the analysis were the presence of nasal symptoms and fever at seven days. Primary health outcomes were obtained by phone call from the doctor to the parents, as well as by a written form filled out by the parents and mailed back to the doctor. It was stated that the groups were comparable at analysis in terms of sex and age, although the data were not reported. Groups were shown to be comparable in terms of previous infections and clinical symptoms. In the educational intervention arm, fewer patients had had previous ear infections (4.1% versus 6.5%, p<0.001) and the rhinorhea presented more often a ‘lighter’ aspect (54.8% versus 49.1%, p<0.001).

Effectiveness results
At seven days, nasal symptoms had disappeared in 986 (69.4%) patients in the conventional treatment arm compared to 1,069 patients (69%) in the educational intervention. The difference was not significant.

When fever had been present at the first consultation, it had disappeared in 867 children (91.7%) in the conventional treatment arm and in 880 (89.5%) children in the educational intervention arm. Again the difference between the two groups was not statistically significant.

Clinical conclusions
The clinical evolution of nasopharyngitis was similar between the two study groups.

Measure of benefits used in the economic analysis
As the effectiveness results showed no difference in clinical benefit between the intervention and comparator, the economic analysis was based on cost differences only (cost-minimisation).

Direct costs
Discounting was not carried out, as it was not relevant to the study. The quantities measured in the study included the number and type of treatments prescribed for nasopharyngitis and the number of follow-up visits. The costs measured were the cost of drugs (as purchased from the chemist), the cost of additional diagnostic tests and drugs for complications, the cost of a GP or paediatrician consultation. Cost results were presented from three different perspectives: out-of-pocket (drug costs only), private insurance reimbursements and national insurance reimbursements. The estimation of quantities/costs was based on actual patient data. The source of resource use data was the patient questionnaires. The sources of cost data were official published data for additional testing (Nomenclature Generale des Actes Professionels), consultations (tarif conventionnel secteur I) and reimbursement ratios (Vidal). The source of the
cost of drugs was not reported. The price year was 1999.

**Statistical analysis of costs**
Some of the resource use data (type of treatment first prescribed) were treated stochastically. Variables were compared using the chi-squared test. Cost data were treated stochastically with differences investigated using analysis of variance tests. Descriptive statistics for the cost data were also reported.

**Indirect Costs**
Indirect costs were not included in the study.

**Currency**
French francs (Ffr).

**Sensitivity analysis**
No sensitivity analyses were carried out.

**Estimated benefits used in the economic analysis**
See effectiveness results above.

**Cost results**
The cost results were as follows:

The total (SD) out-of-pocket drug costs were Ffr 228.7 (78.9) for the conventional treatment group and Ffr 219.8 (62.4) for the educational intervention group. The difference was significant (p<0.001).

The total (SD) cost to private insurance was Ffr 221.5 (102.9) for the conventional treatment group and Ffr 210.6 (94.8) for the educational intervention group. The difference was significant (p<0.001).

The total (SD) cost to national insurance was Ffr 129.7 (51.1) for the conventional treatment group and Ffr 122.3 (40.4) for the educational intervention group. The difference was significant (p<0.001).

Antibiotics were significantly less prescribed in the educational intervention arm than in the conventional treatment arm (p<0.001).

The duration of intervention/comparator costs was seven days. Adverse effects were included in the costing.

**Synthesis of costs and benefits**
Not applicable.

**Authors' conclusions**
The promotion of educational procedures leads to a reduction of antibiotic prescriptions without any risk for the prognosis of children with acute nasopharyngitis. This rationalisation of antibiotic prescription may contribute to restricting the development of bacteriological resistance. It also significantly reduces healthcare costs.

**CRD COMMENTARY - Selection of comparators**
The choice of comparator, namely the use of conventional treatment, was explicitly justified. You, as a user of the
database, should decide whether these prescribing patterns are similar in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis was based on a randomised controlled trial which was appropriate for the study question. The study sample, namely children with acute nasopharyngitis under the age of ten, was representative of the study population. It was stated that patient groups were comparable at analysis, although the data were only partially reported. The effectiveness estimates could have been strengthened by providing an account of the randomisation method, a discussion of the issue of blinding for the assessment of outcomes and a discussion of what controls (if any) where in place to ensure that the doctors selected three to five consecutive patients for inclusion in the study and that no selection bias was occurring. One potential problem with the validity of the estimate of effectiveness is that the protocol seems to have changed, in terms of the age limit for children and the length of their symptoms, but it was not stated if this change of protocol occurred before the start of recruitment or during the study itself.

**Validity of estimate of measure of benefit**
The analysis of benefits was based on the therapeutic equivalence of treatment alternatives. The economic analysis therefore included only costs.

**Validity of estimate of costs**
In general, the analysis of costs was well conducted. For the cost perspectives adopted and the timeframe chosen (seven days), all relevant categories of cost were included in the analysis. Two remarks should be made here: first, the short timeframe of the analysis meant that future cost savings that may result from not using antibiotics for the treatment of nasopharyngitis could be included in the analysis. Second, it was not clear who would bear the costs of the educational intervention. Strong points in the analysis of costs were that for each resource, all relevant costs were included in the analysis, costs were reported separately from quantities, a statistical analysis of some quantities (type of prescription) was conducted, most sources for the unit costs were reported, the dates to which prices relate were reported and the price year was reported. Although resource use data related to 1998 and the price year used was 1999, the authors indicated that this was unlikely to affect their results. The analysis could have been strengthened by reporting the source of the cost of drugs and, for non-French readers, by giving some more details on the three types of quantity/cost boundary adopted.

**Other issues**
The authors made appropriate comparisons of their findings with those from other studies but did not address the issue of generalisability to other settings. The authors did not present their results selectively. The study enrolled children under the age of ten with acute nasopharyngitis and this was reflected in the authors' conclusions. The authors did not report any limitations to their study.

**Implications of the study**
The authors recommend using educational interventions aimed at doctors and parents in order to reduce the prescription of antibiotics to children with nasopharyngitis.

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None stated.

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