Economic evaluation of a disease management program for chronic obstructive pulmonary disease

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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.

CRD summary
The objective was to evaluate the cost-effectiveness of a management programme for chronic obstructive pulmonary disease. The programme reduced hospitalisations and emergency room visits, and was cost saving. Overall, the reporting was good and the methodology was adequate, but the components of the programme may not be generalisable and the cost-saving results should be considered with this in mind.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to evaluate the cost-effectiveness of a management programme for chronic obstructive pulmonary disease (COPD).

Interventions
A disease management programme was compared with usual care. Patients on the programme attended a 1- to 1.5-hour group session, conducted by a respiratory therapist, as case manager. They received an individual written action plan, with information on appropriate initiation of self-treatment, refillable prescriptions and contact details for their case manager and the 24-hour nursing help line. They also received monthly follow-up phone calls from their case manager. For usual care, patients received a one-page handout summarising COPD care, according to guidelines, and giving details of the the 24-hour nursing help line.

Location/setting
USA/secondary care.

Methods
Analytical approach:
The economic evaluation was based on a large multicentre randomised controlled trial (RCT), conducted over one year, at five Veterans Affairs (VA) medical centres. The authors stated that the perspective was that of the VA health care system.

Effectiveness data:
The effectiveness data were from the RCT, which randomised 743 patients; full details were published in a separate paper (see Other Publications of Related Interest). The primary clinical outcome was the combined number of hospitalisations or emergency room visits, for COPD, incurred by each patient during the 12 months of follow-up; this was presented as a rate ratio. Quality of life based on respiratory health status, self-reported using the St. George's Respiratory Questionnaire, was a secondary outcome.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The primary clinical outcome was the measure of benefit.
Cost data:
The direct medical costs included hospitalisations, emergency department visits, and prescriptions for pulmonary drugs (steroids, antibiotics, and bronchodilators). The costs of the management programme included the salary of the case manager, the direct costs of the printed educational material, and use of the phone line at each of the five sites. The time spent administering care by the case manager was not measured, so the full cost of their salary was used. The costs were in US $ and were from VA databases.

Analysis of uncertainty:
One-way sensitivity analyses were undertaken to assess the impact of case load and the use of a registered nurse, rather than a respiratory therapist, to deliver the programme. The cost data were bootstrapped to produce 95% confidence intervals, to indicate statistical significance. Variation in the data was tested using standard statistical tests.

Results
At the end of the year of follow-up, the composite outcome of all hospitalisations or emergency department visits was 27% lower for the disease management group (123.8 events per 100 patient-years) than for the usual care group (mean 170.5 events per 100 patient-years); rate ratio 0.73 (95% CI 0.58 to 0.90).

The mean per patient cost (for health care and the programme) was $4,491 (SD 4,678) for the disease management group, compared with $5,084 (SD 5,060) for the usual care group; a difference of $593 in favour of the disease management group.

The disease management intervention resulted in lower costs and higher effectiveness. The sensitivity analyses all increased the costs for the disease management group, but it remained less costly than usual care. None of the results were statistically significant.

Authors' conclusions
The disease management programme reduced hospitalisations and emergency room visits, and was cost saving.

CRD commentary
Interventions:
The interventions were well described and appropriate, but the resources used for this type of intervention can vary. As highlighted by the authors, the evidence on effectiveness was not consistent. The intervention was one on-site educational session, which was fewer than in the other disease management interventions that were discussed.

Effectiveness/benefits:
The effectiveness data were from a multicentre RCT, for which only limited details were reported. The primary outcome was an intermediate measure, which was not linked explicitly to quality of life. Quality-of-life data were collected, in the trial, but they were not reported and were not used in the economic analysis. Given the limited reporting, an assessment of the level of bias is not possible, and it should be considered to be unclear.

Costs:
The costing was reported clearly and with sufficient detail. The analysis was designed after the trial, which is less robust than when they are undertaken together, but the VA databases were a valid source for the cost and resource data, and they were clearly representative of the setting and perspective. A price year was not reported, but most of the cost reporting was good.

Analysis and results:
The analysis and results were clearly reported. No summary measure of benefit was derived, and the use of an intermediate outcome may hinder generalisability and comparison with different interventions. Based on the authors’ discussion, cost savings, rather than incremental cost-effectiveness results, may be widely used in this area. Despite being presented as an economic evaluation, the analyses focused on the cost elements rather than the clinical outcomes.

Concluding remarks:
Overall, the reporting was good and the methodology was adequate. The components of the programme might not be generalisable and the cost-saving results should be considered with this in mind.
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