Comparison of a network of primary care physicians and an open spirometry programme for COPD diagnosis
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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 study assessed the cost-effectiveness of two different screening programmes (case-finding versus open spirometry) for the diagnosis of chronic obstructive pulmonary disease (COPD). The authors concluded that the case-finding programme using trained physicians was more cost-effective for identifying new COPD cases. The outcomes of the study were inappropriate to measure the cost-effectiveness of the different screening programmes. The authors’ conclusions should be treated with caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The study assessed the cost-effectiveness of two different screening programmes (case-finding versus open spirometry) for the diagnosis of chronic obstructive pulmonary disease (COPD).

Interventions
The intervention was a case-finding programme providing spirometry to high-risk subjects selected by a network of primary care physicians during their daily practice. All network physicians attended two two-hour training sessions on the diagnosis and management of COPD. The comparator was an open spirometry programme based on public invitation, which involved local adverts offering spirometry free of charge to all subjects with chronic respiratory symptoms (such as cough, sputum production, wheezing of dyspnoea). All participants were older than 30 years and lived near a primary health care practice.

Location/setting
Greece/primary care in a semi-rural area

Methods
Analytical approach:
The analysis was based on a single clinical study. The study was conducted over a 12 month period. The authors did not explicitly state the perspective, but appear to have adopted a health service perspective.

Effectiveness data:
The key effectiveness outcomes were the proportion of COPD diagnoses and the numbers needed to screen for a single diagnosis of COPD in each group. A study was conducted across 24 primary health care practices in semi-rural areas of Greece. The open programme identified 905 participants with acceptable spirometry, compared with 201 participants identified in the case-finding programme. The proportion of COPD diagnoses in each group was calculated from contingency tables and summarized with odds ratios, using the open spirometry group as the reference. Numbers needed to screen were calculated as the reciprocal values of prevalence. Results were reported for overall COPD diagnoses plus new cases only. Univariate logistic regression was used to analyse the relationship between participant characteristics and diagnosis of COPD in the two programmes.

Monetary benefit and utility valuations:
Not applicable.
Measure of benefit:
The benefit was measured by the comparative proportions of COPD diagnoses and numbers needed to screen.

Cost data:
Direct costs of the two programmes were included in the analysis. These were the cost of two spirometers, the salaries of the study team, the cost of conducting the spirometry (including the cost of consumables and maintenance), and the cost of the training sessions for the case-finding programme. The salary estimations were based on current compensations in the National Health System of Greece (December 2008). Costs were reported in Euros (EUR).

Analysis of uncertainty:
Standard deviation values were reported for numerical demographic data, and 95% confidence intervals were reported for odds ratio results.

Results
The case-finding programme diagnosed 36.3% of participants (73 out of 201) with chronic obstructive pulmonary disease (COPD). The open programme diagnosed 10.8% of participants (98 out of 905) with COPD (OR 4.69, 95% CI 3.29 to 6.70). The proportion of new cases of COPD (after removing patients with previous COPD diagnoses) was 27.9% in the case-finding programme compared with 8.4% in the open group (OR 4.21, 95% CI 2.86 to 6.21). The numbers needed to screen for a single diagnosis of COPD was 2.7 patients in the case-finding programme compared with 9.2 in the open programme. The numbers needed to screen for a new diagnosis of COPD was 3.6 in the case-finding group compared with 11.9 in the open group.

The average cost of a COPD diagnosis was EUR 78 in the case-finding programme compared with EUR 134 in the open programme. The average cost of a new COPD diagnosis was EUR 102 in the case-finding programme compared with EUR 173 in the open programme.

Authors’ conclusions
The authors concluded that the case-finding programme using trained physicians was more cost-effective for identifying new COPD cases.

CRD commentary
Interventions:
Both programmes were clearly and comprehensively reported. It was not clear whether the open programme was supposed to reflect standard diagnosis practice. Standard practice would have been the most appropriate comparator to adopt to accurately determine the cost-effectiveness of a new alternative. Other potential diagnosis programmes were discussed, in particular an approach from the UK that used a nurse-led community respiratory assessment unit offering spirometry and diagnostic support for primary care physicians. The authors stated that such an approach was not feasible in all settings.

Effectiveness/benefits:
The study reported positive predictive values (the percentage of participants who received spirometry that actually had the disease). There was no information on disease status on those that did not receive spirometry. The authors highlighted the problem of not accounting for false negatives, but stated that this would be more of a problem in the open programme since physicians were not specifically trained in that group. No evidence was supplied to support this assumption. A strategy that has a high positive predictive value may not necessarily result in a high detection rate, as many disease positive patients may be missed. In this case, more patients with the disease were identified through the open programme than the case-finding programme. Given the study data, from a cost-effectiveness point of view, the incremental cost per extra person identified with the disease was of interest. Ideally, information should be available on those who received spirometry and those who did not; the total health outcomes following treatment or no treatment for the population for the different screening strategies could be determined.

Costs:
The cost categories and results were clearly reported. The price year was not reported. The authors did not discuss the use of any cost-adjustment methods. The costs (and benefits) were not discounted, which was reasonable given the short time horizon.
The authors stated that the modest cost of approximately EUR 100 per new diagnosis of COPD had to be considered against the extreme costs of advanced disease, which may be avoided through early intervention. A thorough full economic evaluation would estimate the long-term outcomes, both health and health-care costs, from the different screening programmes for the population targeted. This would account for those identified and not identified, treated and not treated.

**Analysis and results:**
The diagnosis results were adequately reported and average cost for a diagnosis was reported, but it would have been useful to report the total costs per screening programme so that they could have been compared with the increase in the number of people identified as having the disease. Uncertainty around the diagnosis results were presented. The authors remarked that a possible limitation of their study was the fact that the findings may not have been generalisable, since they reflected local conditions applying to their specific setting.

**Concluding remarks:**
The outcomes of the study were inappropriate to measure the cost-effectiveness of the different screening programmes. The authors' conclusions should be used with caution.

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