The costs and benefits of enhanced depression care to employers

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
The study compared two management options, enhanced care and usual care, for patients with depression. Enhanced care consisted of a one-time workplace-based depression screen with care management for those with positive results. Master-level clinicians provided the care management through telephone programmes. Usual care consisted of usual care-seeking and treatment methods, without previous depression screening or care management. Treatment administered to patients with depression was similar in the two strategies and consisted of visits to primary care physicians or psychiatrists and drug treatment with a selective serotonin re-uptake inhibitor.

Type of intervention
Screening and treatment.

Economic study type
Cost-utility analysis and cost-benefit analysis.

Study population
The study population comprised a hypothetical cohort of 40-year-old workers. No further inclusion or exclusion criteria were reported.

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

Dates to which data relate
The effectiveness and demographic data were derived from sources published between 1992 and 2004. The resource use and cost data were derived from sources published between 1999 and 2004. All costs were reported for the price year 2004.

Source of effectiveness data
The effectiveness data were derived from a review and synthesis of published studies.

Modelling
The authors created a state-transition Markov model to evaluate the cost-effectiveness of the interventions. The model was constructed using decision analytic software (Data TreeAge, Williamstown, MA). The six health states included were never depressed, depressed but not in treatment, depressed in treatment, recovered in treatment, recovered not in treatment, and dead. However, the additional states that represented patients with and without care management were not explicitly reported. Each cycle was of 3 months’ duration and the time horizon of the model was 5 years.
Outcomes assessed in the review
The following parameters were included in the model:

the initial distribution across health states,

the natural history of depression,

the sensitivity and specificity of screening for depression, and

3-month probabilities (transition probabilities in usual care and care management, probabilities of recovering or relapse after recovering from depression according to treatment, probability of treatment persistence, and probability of job turnover if depressed, in usual care or under care management).

Study designs and other criteria for inclusion in the review
The authors did not report any specific inclusion or exclusion criteria applied for inclusion in the review.

Sources searched to identify primary studies
Not reported.

Criteria used to ensure the validity of primary studies
Not reported.

Methods used to judge relevance and validity, and for extracting data
Not reported.

Number of primary studies included
Overall, approximately 14 primary studies provided the effectiveness evidence.

Methods of combining primary studies
Not reported.

Investigation of differences between primary studies
Differences between the primary studies do not appear to have been investigated.

Results of the review
The parameter estimates used in the model were reported in full, but are too numerous to be reported in this abstract. Those related specifically to enhanced care were as follows.

The sensitivity of screening for depression was 84% (range: 67 to 99) and the specificity was 85% (range: 80 to 95).

The 3-month transition probability of accepting care management was 92% (range: 86.2 to 95).

The 3-month probability of treatment persistence was 88% (range: 85 to 91.4) when depressed in usual care, 94% (range: 91.2 to 96.3) when depressed in care management, and 88% (range: 50 to 91.4) if recovered.

The 3-month probability of job turnover was 12.23% (range: 8 to 14) when in usual care and 10.89% (range: 7 to 15) under care management.
Measure of benefits used in the economic analysis
Quality-adjusted-life-years (QALYs) were used as the measure of benefit in the economic analysis. The utility values were derived from the literature, with priority given to values obtained using standard gamble methods. The benefits were appropriately discounted at a rate of 3%. Monetary benefits were also used, based on the human capital approach.

Direct costs
The direct costs used in the analysis were the costs of hospitalisation for depression, physicians' visits, pharmacotherapy, time spent in treatment (including transportation and visits), screening, confirmatory depression assessment and care management. The unit costs and the resource quantities were not reported separately (except for physician and psychiatric visits). The unit costs were derived from published sources and were appropriately adjusted and reported for the price year 2004. As the time horizon of the analysis was 5 years, the costs were appropriately discounted at a rate of 3%.

Statistical analysis of costs
The costs were treated deterministically.

Indirect Costs
The costs of productivity losses included the cost of absenteeism or presenteeism due to depression per year, absenteeism or presenteeism when recovered after remission, long-term disability and replacement costs (including hiring and training a new employee). The resources used and costs were derived from official published sources. Average hourly wages were used. However, the costs and quantities were not reported separately. Discounting was appropriately performed and all costs were reported for the price year 2004.

Currency
US dollars ($).

Sensitivity analysis
A one-way sensitivity analysis was performed on all model parameters (including the discount rate) to investigate the robustness of the results to varying data. Ranges used in the sensitivity analyses were based on 95% confidence intervals and value ranges reported in the literature, or on expert opinion where there was a lack of published data. A probabilistic sensitivity analysis was performed and the probabilities assigned to model parameters were reported. The authors conducted 10,000 Monte Carlo simulations and variable values were chosen according to their distribution. The costs and QALYs were calculated. In addition, to investigate the impact of different workforce characteristics, the authors re-estimated the employer's cost and benefits using different occupation-specific wages and occupation-specific multipliers.

Estimated benefits used in the economic analysis
From a societal perspective, usual care resulted in 18.783 discounted QALYs and care management in 18.785 QALYs.

An incremental analysis demonstrated that the care management strategy resulted in 0.002 incremental QALYs.

Cost results
From a societal perspective, the total discounted costs were $3,629 for usual care and $3,669 for care management. Care management resulted in an incremental cost of $39.90.

From the employer's perspective, during the first year, care management resulted in an extra cost of $601 per 1,000 employees in comparison with usual care. However, at the end of the 5-year period, care management resulted in cumulative savings of $2,895 per 1,000 employees in comparison with usual care.
Synthesis of costs and benefits
An incremental cost-effectiveness analysis was performed. This demonstrated that, from a societal perspective, the care management strategy resulted in an incremental cost of $19,976 per QALY gained.

The sensitivity analysis demonstrated that the results were most sensitive to treatment costs. The incremental cost-effectiveness ratio (ICER) ranged from $7,600 per QALY when treatment was administered solely by primary care physicians using only generic drugs, to $38,000 per QALY when treatment was administered only by psychiatrists using only brand-name drugs. Further sensitive parameters were utility associated with depression, depression treatment and suicide rate.

The probabilistic sensitivity analysis demonstrated that the ICER ranged from $9,227 to $48,978 per QALY with a probability of 95%. The ICER was greater than $50,000 per QALY in only 2.3% of the simulations.

The net benefits were sensitive to employers' characteristics (replacement costs, reduced productivity of depressed employees and recovery rates), while enhanced care resulted in greater net benefits for high-income employees who have greater impact on the productivity of co-workers.

Authors' conclusions
Enhanced treatment quality programmes for depression are cost-effective from a societal perspective as well as from the perspective of the employers.

CRD COMMENTARY - Selection of comparators
The comparator, usual care, was selected as it seemed to represent standard practice in the authors' setting. You should decide if this is a widely used technology in your own setting.

Validity of estimate of measure of effectiveness
The authors did not indicate whether a systematic review of the literature was undertaken. Although this is common practice in modelling studies, it does not always ensure that the best data available are used in the model. In most cases, the authors appear to have used data from the available studies selectively. In addition, the impact of differences between the studies was not taken into account when estimating effectiveness. However, the authors carried out extensive sensitivity analyses on all parameters used in the model. These analyses improve both the internal validity and the generalisability of the study by demonstrating the robustness of the results to changes in the base-case estimates.

Validity of estimate of measure of benefit
The estimation of the health benefit, QALYs, was derived appropriately using the model. The source of utility estimates was reported. The authors stated that, where possible, the utilities used were obtained from studies that had used standard gamble techniques. This is considered to be the more valid of the methods used in studies. The health benefits were appropriately discounted.

Validity of estimate of costs
The analysis of the costs was performed from both a societal perspective and the perspective of employers who purchase programmes of care. It appears that all the relevant categories of costs, for both analyses, have been included. The costs and the quantities were not reported separately, which will prevent the analysis from being easily reworked for other settings. However, extensive sensitivity analyses were conducted to assess the robustness of the estimates used. Moreover, the ICER, discounting and price year were appropriately reported.

Other issues
For the analysis from a societal perspective, comparisons with other studies demonstrated that the results were in
agreement. However, for the analysis from the employer's perspective, the results could not be compared because of a lack of published studies using the same perspective in the economic analysis. The issue of generalisability of the results to other settings was adequately addressed and relevant critical factors were fully discussed. The authors do not appear to have presented their results selectively and their conclusions reflected the scope of the analysis. A limitation to the study was that, owing to a lack of robust data on the impact of depression on productivity, productivity losses and turnover, the true effect on employers was underestimated.

**Implications of the study**
The authors did not make explicit recommendations for changes in policy or practice. However, they suggested that empirical effectiveness trials should be conducted to evaluate the impact of the interventions on the employed population and the work outcomes.

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**Other publications of related interest**
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**Indexing Status**
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**MeSH**
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