Personalization in the health care system: do personal health budgets have an impact on outcomes and cost?

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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
This study aimed to evaluate the effectiveness and cost-effectiveness of personal health budgets for patients with long-term physical or mental health conditions. The authors concluded that, despite study limitations, personal health budgets were cost-effective. The study was generally well conducted and reported. Given its limitations, the clinical and intervention variation, and the high uncertainty in the results, the authors’ conclusions should be more cautious.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
This study aimed to evaluate the effectiveness and cost-effectiveness of personal health budgets for patients with long-term physical or mental health conditions.

Interventions
Patients were allocated personal health budgets or given conventional support. Budgets could be used to buy home care, transport, complementary therapy, talking therapy, physiotherapy, chiropody, and psychiatric appointments.

Location/setting
UK/primary and secondary care.

Methods
Analytical approach:
The cost-effectiveness analysis was linked to a controlled trial conducted in 20 centres. The time horizon was the study period of 12 months. The study perspective was not stated.

Effectiveness data:
The primary effectiveness data were scores on the EQ-5D, the early version of the Adult Social Care Outcome Toolkit (ASCOT), a subjective global scale of general life happiness and satisfaction based on an Office for National Statistics measure, and the 12-item General Health Questionnaire. Patients were interviewed at the start and at 12 months. There were 2,235 patients in the study; 25% were randomised to intervention or control; the others were selected by health professionals who offered personal budgets or were patients who were not offered budgets at the same site. The difference in the average outcomes between follow-up and baseline, between the groups, was calculated to account for any confounding factors during follow-up. Outcomes were adjusted, using multiple regression, for any confounding initial characteristics, except quality of life score. Missing values were created using multiple imputation.

Monetary benefit and utility valuations:
EQ-5D questionnaires were completed by patients at the start and at follow-up, in short structured interviews. The net monetary benefit was calculated assuming a willingness-to-pay of between £10,000 and £40,000 for a quality-adjusted life-year (QALY), or for a change in the ASCOT.

Measure of benefit:
The two primary measures of benefit were changes in the EQ-5D and ASCOT scores over 12 months.
Cost data:
The service and support costs were estimated. The primary care resources were based on general practitioner records, and the secondary care resources were based on the Hospital Episode Statistics database. Costs were estimated for each group, for the 12 months before the study and for the 12 months after the start of the study. All costs were reported in UK £.

Analysis of uncertainty:
Uncertainty was assessed using values from the data, non-parametric bootstrapping, and parametric bootstrapping. The differences in outcomes between groups were assessed for statistical significance. Sensitivity analyses were run assessing different imputation methods, and assuming that budgets were a substitute rather than a supplement to conventional services.

Results
The EQ-5D score increased by 0.011 per patient less in the personal budget group than in the control group. The ASCOT score increased by 0.039 per patient more in the personal budget group than in the control group.

The change in cost per patient was £1,120 less in the personal budget group than in the control group.

Since the EQ-5D scores were measured over a year, the change in the difference in EQ-5D score represented a QALY. The net monetary benefit was positive for the range of different values of willingness-to-pay for a QALY (£10,000 to £40,000). At a willingness-to-pay of £20,000, it was £910 per patient; the probability of significance was 0.459.

Authors’ conclusions
The authors concluded that, despite study limitations, personal health budgets were cost-effective.

CRD commentary
Interventions:
The interventions were not described in detail, but the reference was given for a publication on the personal health budget pilot programme. Standard practice was appropriately included, but was not described, making it unclear how generalisable it would be to other settings. The study was conducted in 20 centres in the UK, so was likely to represent UK standard practice.

Effectiveness/benefits:
Most of the data for this study were observational, with inherent risks of confounding, but the authors made good efforts to adjust for any confounding factors. Appropriate health outcomes were selected. The time horizon of one year may not have been sufficient for the chronic diseases studied. Regression was used to control for confounders, but it was surprising that the initial scores on the EQ-5D and ASCOT were not included as covariates. Appropriate methods were used to impute missing data, but the extent to which they were missing was not clearly reported.

Costs:
The estimated costs were appropriate for what appears to have been a UK NHS perspective; the perspective was not stated. It was unclear if personal budgets had any administrative costs; they were neither discussed nor included. The price year was not explicitly stated, but was likely to have been the year that the controlled trial was conducted.

Analysis and results:
The analysis and results were generally well reported. Uncertainty was evaluated using appropriate sensitivity analyses. The probabilistic analysis, based on bootstrapping, presented probabilities for statistically significant differences rather than the likelihood of cost-effectiveness. Bootstrapping enables the calculation of a likelihood, which is more useful for decision-making. The authors presented 90% confidence intervals for their net monetary benefit calculations; these showed considerable uncertainty, with every interval crossing zero by significant margins. The authors discussed limitations to their study, including a high drop-out rate over the year. Different imputation methods were tested. There was considerable uncertainty about which strategy was more cost-effective, which may reflect variation in implementation and clinical populations across the 20 centres.

Concluding remarks:
The study was generally well conducted and reported. Given its limitations, the clinical and intervention variation, and the high uncertainty in the results, the authors’ conclusions should be more cautious.

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