Cost-effectiveness of two vocational rehabilitation programs for persons with severe mental illness


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
Two vocational programmes were compared. The first programme was individual placement and support (IPS), in which employment specialists within a mental health centre help patients obtain competitive jobs and provide them with ongoing support. The second was enhanced vocational rehabilitation (EVR), in which stepwise services that involve pre-vocational experiences are delivered by rehabilitation services. EVR was considered enhanced because an extra vocational rehabilitation counsellor was placed in the rehabilitation services administration to ensure rapid and assertive linkage with service vendors, in order to avert the problem of drop-out during the referral process.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised all agency clients who presented themselves at a mental health agency that served people who require intensive case management, usually because their psychiatric disorders are complicated by homelessness, a co-morbid substance abuse disorder, or HIV infection. Participants who met the criteria of having severe mental illness, unemployment, willingness to give informed consent, and absence of memory impairment or medical illness that would have prevented them from being employed or participating in research interviews, were included. Individuals were considered to have severe mental disorder if they met criteria for schizophrenia, schizoaffective disorder, bipolar disorder, recurrent major depression or borderline personality disorder, and had two years of impaired role functioning.

Setting
The setting was an institution. The economic study was carried out in Southeast Washington (DC), USA.

Dates to which data relate
The effectiveness data were collected during an 18-month period from January 1994 to July 1995. Although not explicitly stated, the data on resource use were also collected during this period and the price year was 1995.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that used in the effectiveness study.
Study sample
The use of power calculations to determine the sample size was not mentioned. The 154 participants were randomised into two groups. A total of 76 participants were assigned to IPS and 76 to EVR. Two of the IPS participants dropped out during the study, while a third was excluded from the final analysis because IPS was not considered to be the cause of this person's costs or effects. Therefore, the final number of participants in the IPS group was 73.

Study design
This was a randomised study. The method of randomisation was through stratification on the basis of working history (more than a year of continuous employment in a previous job). The study was carried out in a single centre. The major assessments were conducted at baseline, 6, 12 and 18-month follow-up points, when research interviewers completed the employment and income review. The IPS programme was implemented according to a manual and was monitored by a research team.

Analysis of effectiveness
Although not explicitly stated, the authors seem to have adopted a per-protocol analysis on the results since drop-outs were excluded. The primary outcomes measured were the number of hours and weeks spent in competitive employment, and combined earnings over the study period. Competitive employment was defined as work in the competitive job market in the integrated work setting. Non-parametric tests revealed a near-significant trend of less hospitalisation for the EVR group in the period before the study. It was indicated that the groups did not differ in global functioning, symptoms, general quality of life or self-esteem, but the IPS participants had more psychiatric admissions during the study.

Effectiveness results
For competitive work, the average employment for participants in the IPS programme was 326 hours (standard deviation, SD 572) and 15 weeks (SD 21). For participants in the EVR programme, the results were 28 hours (SD 125) and 1 week (SD 6). There was no significant difference between the total earnings of either group.

The results of the non-parametric Wilcoxon rank sum test were p<0.001 for all comparisons.

Clinical conclusions
IPS participants spent a significantly greater number of hours and weeks in competitive employment than the EVR participants.

Measure of benefits used in the economic analysis
The primary outcomes were the numbers of hours and weeks of competitive employment, and the combined earnings. Competitive work was defined as work in the competitive job market in integrated work settings, at prevailing wages, with supervision by a person employed by the business. Combined earnings were earnings derived from competitive and non-competitive employment. A cost-effectiveness analysis was conducted for each of the outcomes.

Direct costs
Discounting was not performed as it was irrelevant (the costs were incurred over less than 2 years). The quantities and the costs were measured separately, and the authors adopted a health service perspective. The costs included both inpatient and outpatient components. The outpatient costs were for medication management, intensive case management, group therapy and family therapy. The quantities were estimated from actual data. The costs were calculated using 1995 dollars. The unit costs for outpatient services were calculated using data from the agency’s audited 1995 financial statement. The average unit costs were also calculated. The inpatient costs were derived from the Medicare cost report data for two of the most heavily used hospitals.
The vocational rehabilitation costs were calculated differently for each programme. IPS workers completed service logs indicating the number of service hours received. The costs of the EVR programme were for co-ordination, rehabilitation services administration and additional assessment costs routinely used by the rehabilitation services administration, such as the costs of medical and psychological evaluations.

**Statistical analysis of costs**
The costs were treated in a stochastic manner. A non-parametric test, the Wilcoxon rank sum test, was used to establish if there were any differences between the two groups since the data were skewed. The costs were further investigated using two multiple linear regression analyses. A bootstrapping method was used to create 5,000 incremental cost-effectiveness ratios (ICERs), to measure the uncertainty associated with the estimates of the ICERs.

**Indirect Costs**
The indirect costs were not considered in the analysis.

**Currency**
US dollar ($).

**Sensitivity analysis**
No sensitivity analysis was undertaken.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The total mental health costs were $23,018 (SD 20,550) for IPS and $19,396 (SD 14,895) for EVR.

The total vocational services costs were $6,069 (SD 4,295) for IPS and $5,723 (SD 4,438) for EVR.

The overall costs were $29,087 (SD 20,399) for IPS and $25,119 (SD 15,212) for EVR.

No statistically significant differences were found between the two groups. In both cost regression models, the coefficient on IPS variable was positive but not significant, (p=0.23). The combined earnings were $1,997 for IPS and $2,005 for EVR. The results of t-tests were statistically significant, (p<0.001).

**Synthesis of costs and benefits**
An incremental analysis was performed to combine the estimated benefits and costs. The ICER indicated that participation in the IPS programme was associated with $13 per additional hour of competitive work, $283 per additional week of competitive work, and -$496 for combined earnings. This indicated that IPS was dominated by EVR when using the combined earnings measure of benefit. The statistical cost-effectiveness analysis suggested that there was a great deal of uncertainty for the ICER estimate when combined earnings were used as the outcome measure.

**Authors' conclusions**
The analysis suggested that participants in the individual placement and support (IPS) programme engaged in competitive employment at a higher cost. When combined earnings were used as the outcome, the data from the statistical analysis were insufficient to enable any firm conclusions to be drawn. The findings illustrated the importance of the choice of outcomes in the evaluation of employment programmes.
CRD COMMENTARY - Selection of comparators
No explicit justification was given for the choice of the comparator, although it would appear to represent the current 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 study used a prospective randomised design, which is the ideal study design. The study sample appears to have been representative of the study population. There was little reporting of baseline data. Follow-up information was very high. There were only two drop-outs and one exclusion. The per-protocol analysis was performed on the results and this introduces the possibility of bias.

Validity of estimate of measure of benefit
The measures of benefit were obtained directly from the effectiveness analysis. The authors justified their choice of the estimate.

Validity of estimate of costs
All the cost categories relevant to the health service perspective appear to have been included in the analysis. The costs and the quantities were reported separately. Discounting was not undertaken since the costs were incurred over less than two years. The indirect costs were not considered, as the study was conducted from a health service perspective. The determination of the cost estimates was fully explained, as the authors provided details on how the different estimates were arrived at. Statistical analyses and sensitivity analyses were not undertaken on the quantities, and this may limit the interpretation of the results. No statistical and sensitivity analysis of the prices were performed either. Charges were used to proxy prices. The date to which the prices relate was reported.

Other issues
The authors noted that their result that the health outcomes were no worse with IPS was consistent with some research. One study indicated that the health outcomes were greater with IPS. The authors noted that the "enhanced nature" of the vocational rehabilitation condition may affect the generalisability of the results. The authors did not present their results selectively. The authors' conclusions reflect the scope of their analysis. Several limitations of the study were reported. For example, only the direct mental health costs were used, the authors were unable to obtain information on the costs of certain services, and different strategies were used in costing the two interventions. Other limitations included the relatively small sample, the large variation in the costs, and the large amount of uncertainty in the cost-effectiveness ratio.

Implications of the study
The authors indicated the need for a wider perspective (namely societal) to be taken in future when carrying out the analysis of the costs, and a longer follow-up period. The authors also highlighted the need for future studies that focus on the total earnings with a larger sample, in order to illustrate the extent to which trade-offs are necessary to generate an increased total earning.

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Bibliographic details