The outcome and cost of alcohol and drug treatment in an HMO: day hospital versus traditional outpatient regimens

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 use of a day-hospital programme (DHP) for the treatment of alcohol and drug addictions. The DHP consisted of 104 treatment sessions that included group therapy, education, relapse prevention and family-oriented therapy. Patients attended the DHP for 6 hours daily during the first 3 weeks, then for 1.5 hours four days per week during the next 5 weeks.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised men and women over 18 years old who met the criteria for drug or alcohol abuse or dependence, and who requested treatment. Patients with dementia, mental retardation, or active psychosis were excluded.

Setting
The setting was secondary care. The study was performed in Sacramento (CA), USA.

Dates to which data relate
The effectiveness data were collected between April 1994 and December 1996. The health care usage and cost data were collected from 1993 to 1997. The price year was 2000.

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

Link between effectiveness and cost data
The costing was performed on the same patient population as that used in the effectiveness analysis. Since the cost data were collected from registration databases and questionnaires, the cost data may have been collected both prospectively and retrospectively.

Study sample
No power calculations appear to have been performed in the planning phase of the study. Patients that met the study criteria and requested treatment at the institution where the study was performed were considered for analysis. A total
sample of 1,073 individuals met the criteria. Of these, 668 accepted to be randomly allocated to one of the programmes, while 405 did not and were self-allocated. The final sample comprised 310 patients randomly allocated to the DHP arm, 358 randomly allocated to the OPP arm, 211 self-allocated to the DHP arm, and 194 self-allocated to the OPP arm. The patients who agreed to be randomised were shown to be significantly different, in several important characteristics, from those who declined to be randomised. For example, those randomised were younger and had greater drug, employment and family problems.

**Study design**
This study comprised two sub-studies. One was a randomised controlled trial (RCT), while the other was a non-RCT. These were based on patients who accepted randomisation (RCT) and those who declined randomisation (non-RCT), respectively. The study was carried out in a single centre. The duration of follow-up was 6 months. After this time, 62 (20%) randomly allocated DHP patients, 65 (19%) randomly allocated OPP patients, 35 (14%) self-allocated DHP patients and 27 (17%) self-allocated OPP patients had been lost to follow-up. The method of randomisation was not reported. The outcome assessment does not appear to have been blind.

**Analysis of effectiveness**
The basis for the effectiveness analysis was intention to treat. The primary health outcomes assessed were alcohol, other substance and total abstinence rates. The other outcomes assessed were:
- substance problem severity, as measured by the addiction severity index (ASI);
- psychiatric status, as measured by the Symptom Distress Checklist short form (SCL-66); and
- motivation, in terms of the patients' goals in relation to alcohol and drug use.

Baseline differences were found between the patient groups. These mainly concerned the percentage of unemployed patients, and the severity of the substance problem. Logistic regressions and multiple linear regressions were used to control for baseline differences between the groups. Moreover, the type of treatment, severity and motivation were also controlled for in these analyses. Comparisons of the randomised- versus self-assigned patients, patients that were followed-up versus the overall sample size, and DHP patients versus OPP patients were reported. Sub-group analyses, to compare the outcome results according to psychiatric severity, were conducted.

**Effectiveness results**
Overall, there were significant improvements in the ASI alcohol and drug severity scores at 6 months for all the groups, (p<0.0001 for the randomised sample; the p-value for the self-selected sample was not shown).

In the randomised sample, a higher proportion of DHP patients initiated treatment (79%) than did OPP patients (71%), although there were no significant differences in the abstinence rates between these groups. Randomised DHP patients with midlevel psychiatric severity presented better total abstinence rates (odds ratio, OR=1.91; 95% confidence interval, CI: 0.98 - 3.74) and alcohol abstinence rates (OR 2.36, 95% CI: 1.15 - 4.85) than OPP patients.

In the self-allocated sample, the DHP patients presented higher total, alcohol and drug abstinence rates than OPP patients. The abstinence rates were 64% (DHP) versus 47% (OPP) for total abstinence, (p=0.002), 72% (DHP) versus 61% (OPP) for alcohol, (p=0.030), and 81% (DHP) versus 72% (OPP) for drugs, (p=0.054). The DHP patients also showed a higher percentage of patients initiating treatment (90% versus 73%; p=0.001). DHP patients with midlevel psychiatric severity also presented significantly better total abstinence rates (62%) than did OPP patients (39%), (p=0.032). In general, some of the predictive factors of the outcomes were being in the DHP group, the patients' motivation, and psychiatric severity.

**Clinical conclusions**
Better outcomes were obtained among self-allocated DHP patients when compared with self-allocated OPP patients. Midlevel psychiatric severity patients in the DHP group presented the higher abstinence rates in both the randomised...
and the self-allocated sub-samples. No significant differences were found between randomised DHP and OPP patients. The percentages of patients initiating treatment was higher with DHP, independently of whether the patients were randomly allocated or self-allocated to this intervention.

**Measure of benefits used in the economic analysis**

The summary measures of benefit used the total, alcohol and other substance abstinence rates. These measures were obtained directly from the effectiveness analysis.

**Direct costs**

The direct costs considered in the economic analysis were those of the health service. These were for all visits (intake, psychiatric, medical and individual counselling visits), inpatient and outpatient services, and out-of-plan health care utilisation. Overhead costs were also included. The direct costs were obtained from hospital databases and questionnaires completed by the patients. Therefore, the costs were estimated from actual data. The distribution of resource use among the patients was reported, although not the unit costs used to value it. Discounting was not performed, but it was not relevant since the costs were incurred during less than 2 years. The study reported the average costs per patient from intake to week 3 after intake, from week 3 to week 8 after intake, and from week 8 to 6 months after intake. The price year was 2000.

**Statistical analysis of costs**

No statistical analyses of the costs were reported.

**Indirect Costs**

No indirect costs were estimated.

**Currency**

US dollars ($).

**Sensitivity analysis**

No sensitivity analyses were performed.

**Estimated benefits used in the economic analysis**

See the 'Effectiveness Results' section.

**Cost results**

The costs per DHP-randomised patient were $747.57 during the 3 weeks following intake, $396.96 from week 3 to week 8 after intake, and $495.50 from week 8 to 6 months after intake.

The costs per OPP-randomised patient were $257.21 during the 3 weeks following intake, $235.53 from week 3 to week 8 after intake, and $403.91 from week 8 to 6 months after intake.

**Synthesis of costs and benefits**

Incremental cost-effectiveness ratios (ICERs) were estimated for those health outcomes in which the DHP had a significant effect when compared with the OPP.

The ICER per abstention from alcohol for the randomised, midlevel psychiatric severity group was $5,464.
The ICER per total abstinence for the self-selected sample was $9,576.

The ICER per abstention from drugs for the self-selected sample was $23,721.

The ICER per total abstinence for the self-selected mid-level psychiatric severity group was $4,629.

**Authors’ conclusions**

The day-hospital programme (DHP) may produce a greater clinical benefit for the self-selected group and for midlevel psychiatric severity patients. The authors stated that the DHP was more cost-effective for midlevel psychiatric severity patients than the outpatient programme (OPP).

**CRD COMMENTARY - Selection of comparators**

OPP was chosen as the comparator because it was the alternative treatment for individuals with drug or alcohol abuse, or dependence, in the authors' setting. You must decide whether this is a widely used health technology in your own setting for the treatment of this type of individual.

**Validity of estimate of measure of effectiveness**

Two study designs were used in the effectiveness analysis, an RCT and a non-RCT. The method of randomisation used was not reported. A justification was given for the non-randomisation of one of the sub-samples. More specifically, some individuals are more difficult to recruit for RCTs depending on the levels of commitment and, moreover, non-randomisation is useful to assess the generalisability of the results. Those who accepted randomisation and those who did not constituted different populations. Appropriate logistic and multiple linear regressions were performed to control for all the significant differences and possible confounding factors that the patients’ groups showed at baseline. However, as the authors reported, there may have been unobservable differences between the patients that may have influenced the effectiveness results obtained. In addition, randomisation may have led to an underestimation of the effectiveness benefits, as the results of the interventions compared at analysis depended on the level of compliance and motivation of the patients.

**Validity of estimate of measure of benefit**

The estimation of benefits was obtained directly from the effectiveness analysis. Although abstinence rates are measures commonly used in studies of addiction and dependency, the use of a more general summary measure of benefit, such as quality-adjusted life-years, would have been more appropriate. This is because it would have allowed the results of these interventions to be compared with those from other interventions.

**Validity of estimate of costs**

All the categories of cost relevant to the perspective adopted (the health service) may have been included in the analysis. However, it was unclear whether the patients were receiving some medication and if this cost was considered in the economic analysis. No indirect costs were reported. These costs are likely to be different depending on the implemented programme. The distribution of the resources used among the patients was reported, although not the unit costs used to value it. One of the cost data sources was a questionnaire, which was completed by the patients. The authors performed a validity test of the questionnaire's results to assure that the results agreed with published studies. The price year was reported. Discounting was, appropriately, not performed since the costs were incurred during less than 2 years. No statistical or sensitivity analyses were performed, which introduces uncertainty into the reliability of the cost results.

**Other issues**

With the exception of the agreement rates found in the cost data questionnaire, appropriate comparisons of the study findings with those from other studies were not made. Given the different results between the randomised and non-randomised patients, the results obtained were inconclusive in terms of their generalisability to the study population.
Implications of the study
The authors suggested that further research should be performed, considering both randomised and self-selected samples of patients, to analyse differences between the two types of studies. In addition, it should be studied whether DHP patients did better because of the appropriateness of the services offered by this intervention.

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Other publications of related interest

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