Inpatient alcohol treatment in a private healthcare setting: which patients benefit and at what cost?


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
Inpatient treatment of subjects with alcohol dependence.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Subjects with a Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) diagnosis of alcohol dependence who were not dependent on any other substance, as confirmed by the Structured Clinical Interview for DSM-III-R (SCID). Patients were excluded if they were in severe withdrawal, had serious medical problems, or were court-mandated.

Setting
Non-profit psychiatric hospital. The economic analysis was carried out in the USA.

Dates to which data relate
Effectiveness and resource use data corresponded to patients admitted to the study institution between 1988 and 1992. The price year appears not to have been reported.

Source of effectiveness data
The evidence for the final outcomes was based on a single study.

Link between effectiveness and cost data
Costing was reported to have been conducted based on both the intention-to-treat principle (which was not reported in the paper) and treatment completers only (regarding those who successfully completed the two programmes). The costing appears to have been performed prospectively.

Study sample
Power calculations were not used to determine the sample size. The study sample consisted of 173 subjects who were clinically referred to either the inpatient group (n=93) with a mean (SD) age of 37.1 (10.8) years or to the outpatient group (n=80) with a mean (SD) age of 38.9 (10.1) years. The study sample was one of three different diagnostic subgroups (total n=305; 185 in the inpatient group and 120 in the outpatient group) who had participated in the parent
study of the cost-effectiveness of inpatient versus outpatient addiction services. There were no differential study refusal rates by inpatients compared to outpatients.

Study design
This was a prospective cohort study, carried out in a single centre. Drinking status was evaluated during treatment, and at 3, 6, and 12 months after treatment. Regarding the loss to follow-up rate, it was reported that, of the 132 treatment responders, 75% had a follow-up status for the 12-month analysis, resulting in 99 subjects being evaluated (it was also reported that the outpatient group had a large attrition rate; however, the details of drop out rates were published elsewhere). Patients were clinically referred (not "assigned") to inpatient or outpatient treatment by clinically-trained programme staff who had access to the patient's medical and psychiatric history and current status via a psychosocial and diagnostic interview conducted by a psychiatrist.

Analysis of effectiveness
The principle used in the analysis of effectiveness appears to have been both intention-to-treat and treatment completers only. The primary health outcome measure was drinking status (the rates of significant drinking in the post-treatment period). Significant drinking was defined as:

1. reported consumption of 3 or more alcoholic drinks in a sitting,
2. admission to an inpatient or detoxification centre, and/or
3. incarceration due to alcohol-related behaviours.

An abbreviated version of the Timeline Followback (TLFB) was used to document a return to significant drinking during and after treatment discontinuation to record the number of drinking days. Psychiatric symptoms and alcohol-related consequences were assessed at treatment entry with two standardised, self-report measures. The Symptom Checklist-90-Revisited (SCL-90-R) was used to assess psychiatric symptoms. The Michigan Alcohol Screening Test-Revisited (MAST-R) was used to measure the number of lifetime alcohol-related consequences. A survival (no significant drinking) analysis was conducted to evaluate whether there were differences between the two study groups in the rate of return to significant drinking following treatment up to 12 months after treatment. A hierarchical logistic regression analysis was used to assess significant drinking rates for inpatients compared to outpatient responders at all three follow-up points while covarying subjects for the number of lifetime drinking consequences they reported at pre-treatment. The study groups were comparable in terms of baseline demographic (except for socio-economic status, which was lower for the inpatients versus outpatients) and clinical characteristics (in terms of the mean global SCL-90-R and MAST-R scores).

Effectiveness results
The effectiveness results were as follows:

There were significantly more inpatients than outpatients who attended most of the treatment visits and who were not drinking by the end of treatment (84, or 90% of inpatients versus 48, or 60% of outpatients, (p<0.01)).

Comparison of the rates of significant drinking in the post-treatment period between inpatient and outpatient responders using survival analyses showed that there were no significant differences between the two curves.

The measures targeted for the matching analyses, SCL-90-R and MAST-R, were positively correlated with one another (Pearson's r=0.33; p<0.05). However, in the logistic regression analysis, only the MAST-R scores (and not the SCL-90-R scores) related to significant drinking, most notably at the first post-treatment follow-up at 3 months.

The study found that subjects who had high MAST-R ratings at treatment entry had reduced rates of significant drinking in the three month period after successfully completing inpatient compared to outpatient treatment (p<0.05; odds ratio: 2.41).
There were no significant interactions between treatment setting and outcome based on the MAST-R scores at the 6-month follow-up (p>0.35; odds ratio: 1.48), nor at the 12-month follow-up (p>0.25; odds ratio: 1.66).

Clinical conclusions
Patients with multiple drinking-related consequences were less likely to return to significant drinking in the first 3 months after treatment if they had attended inpatient rather than outpatient treatment. Thus, inpatient treatment appeared to have some advantage over outpatient treatment in the early recovery period for patients with multiple drinking-related consequences.

Measure of benefits used in the economic analysis
As mentioned by the authors, the health summary benefit measure was the probability of returning to significant drinking, given the subject's psychiatric severity and/or number of drinking consequences at treatment entry. This probability was obtained for each subject directly from the logistic regression that tested the interaction between treatment setting and MAST-R scores in predicting outcomes.

Direct costs
Costs were not discounted due to the short time frame of the cost analysis. Some quantities were reported separately from the costs. Cost items were not reported separately. Cost analysis covered the direct costs of delivering the treatment services and transportation. The perspective adopted in the cost analysis appears to have been that of the private payer. A modified version of the Treatment Services Review (TSR) was used to record the total number of treatment service hours attended during the intensive treatment programme each week via interviews with the subject. A weighted cost-to-charge ratio was applied to the billing charges for services to adjust for geographic- or institution-specific charges. The cost analysis was based on both intention-to-treat (which was not reported in the paper) and treatment completers only. The price year appears not to have been reported.

Statistical analysis of costs
Student's t test was used to compare the study groups in terms of costs.

Indirect Costs
It was reported that wage loss was included in the cost calculation, but no further information was provided.

Currency
US dollars ($).

Sensitivity analysis
Not conducted.

Estimated benefits used in the economic analysis
The logistic regression analysis of probability of significant drinking at 3 months after attending an inpatient or outpatient programme for 124 treatment programme responders (94% followed) resulted in the following parameter estimates:

- Intercept, parameter estimate: -0.7879; odds ratio: 0.455;
- Treatment Programme, parameter estimate: -1.1077; odds ratio: 0.330;
- MAST-R, parameter estimate: -0.2457; odds ratio: 0.782;
MAST-R x Tx Programme, parameter estimate: 0.8810; odds ratio: 2.413; p<0.05;

Full model, p<0.01; concordance = 64.5%.

The analysis showed that subjects with higher MAST-R scores had a greater probability of returning to significant drinking in the first 3 months post-treatment if they had been in the outpatient rather than the inpatient programme.

Cost results
For treatment responders, the average (SD) cost of successfully completing inpatient treatment was $9,014 ($2,986) versus $1,420 ($619), (p< 0.01); a ratio of 6.5:1.

Synthesis of costs and benefits
The cost-effectiveness ratio was calculated by dividing treatment costs by the probability of returning to significant drinking. For treatment responders, the inpatient:outpatient cost-effectiveness ratio was calculated for the 3-month follow-up at 4.5:1, at the 6-month follow-up at 5.3:1, and at the 12-month follow-up at 5.6:1.

Authors' conclusions
Identifying better patient outcomes in early recovery with inpatients rather than outpatient treatment makes this one of the “rare” research reports that found something favourable about inpatient over outpatient treatment, even if only in the early stages of recovery.

CRD COMMENTARY - Selection of comparators
The outpatient programme, as a widely acceptable method of delivering services in the context in question, was regarded as the comparator. You, as a database user, should consider which health technology is used widely in your own setting.

Validity of estimate of measure of effectiveness
The internal validity of the effectiveness results can not be fully guaranteed due to the non-randomised nature of the study design (it was reported that a non-randomised design was used to preclude the possibility of excluding more severely-impaired patients) and the fact that no power calculations were performed. Furthermore, it was noted that the poorer results for the outpatient group in the first three months may have resulted from improper clinical referral of some patients to an outpatient rather than a more intensive inpatient setting. The study groups were comparable in terms of baseline demographic and clinical characteristics, except for socio-economic status, which was lower for the inpatient group. The study sample appears to have been representative of the study population.

Validity of estimate of measure of benefit
Estimation of benefits was obtained directly from the effectiveness analysis using the logistic regression analysis. This choice of estimate was justified.

Validity of estimate of costs
The validity of the cost results was enhanced by the following positive features of the cost analysis: some quantities were reported separately from the costs; the perspective adopted in the cost analysis was reported; a cost-to-charge ratio was used to adjust for local or institution specific factors; the effects of alternative procedures on indirect costs appear to have been addressed; and statistical analyses were performed on some resource consumption and cost data. However, the validity of the cost results may have been weakened by the following characteristics: adequate details of methods of cost estimation were not given, for example it was not reported how the transportation and wage loss costs were calculated; the price year was not specified and it is not clear whether the cost data were adjusted for inflation; cost results may not be generalisable outside the study setting.

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Other issues
The study results may need to be treated with a good degree of caution given the limitations of the study design described above. The issue of generalisability to other settings or countries was addressed. The authors noted that the study group of middle-to-upper socio-economic status who received treatment at a non-profit, private-pay facility limits the generalisability of the results in this study. Appropriate comparisons were made with other studies. The question of whether the study sample was representative of the study population was addressed in the authors' general comments.

Implications of the study
The authors hope that the study results will stimulate examination of causal factors that may account for the "continued" improvement seen for selected inpatients. In addition, it would be important to continue investigating optimal referral criteria for inpatient or other intensive treatment programmes so that "high-problem" patients will not be forced to first fail outpatient treatment before they can be admitted to inpatient treatment (the most expensive alcohol treatment course).

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Other publications of related interest

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