Costs and effectiveness of substance abuse treatments for homeless persons

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
Four substance abuse treatments for homeless persons were examined. All the programmes lasted one year and comprised three phases. Phase I lasted 2 months, phase II lasted 4 months, and phase III lasted 6 months.

Usual care (UC) consisted of counselling (12 step) in phase I and further counselling (aftercare) in phase II, with no intervention in phase III.

Enhanced care (EC) consisted of counselling (day treatment) in phase I, counselling (aftercare), housing (rented Abstinent Contingent Housing, ACH, for subsidised rent) and work (paid Abstinent Contingent Work Therapy, ACWT, for minimum wage) in phase II, and no intervention in phase III.

Day treatment (DT) offered counselling (DT) in phase I, counselling (aftercare) and work (vocational rehabilitation) in phase II, and counselling (aftercare) in phase III.

Day treatment plus experimental (DT+E) consisted of counselling (DT) and housing (free ACH) in phase I, counselling (aftercare), housing (rented ACH) and work (paid ACWT) in phase II, and counselling (aftercare) in phase III.

Type of intervention
Rehabilitation.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised individuals who were selected on the basis of the inclusion criteria. The inclusion criteria specified homeless people with substance abuse disorders (primarily cocaine) and non-psychotic-mental illness, but no psychiatric or physical illness that required inpatient hospitalisation. In addition, the participants had to have sufficient cognitive ability to provide informed consent.

Setting
The setting was the community. The economic study was conducted in the USA.

Dates to which data relate
The effectiveness and resource use data were gathered from 1990 to 1992 for the Homeless 1 study and from 1995 to 1997 for the Homeless 2 study. The price year was 2000.

Source of effectiveness data
The effectiveness evidence came from two single studies that had been published (Milby et al., see Other Publications of Related Interest).
Link between effectiveness and cost data
The costing was conducted retrospectively on the same sample of patients as that used in the effectiveness study.

Study sample
The use of power calculations was not reported. The study participants were volunteers. Further details of the methods used to select the sample were not reported. In the Homeless 1 study there were 131 participants, 62 in the UC group and 69 in the EC group. The UC group contained 87.1% men and the mean age was 35.7 (+/- 6.2) years. The EC group contained 72.5% men and the mean age was 36 (+/- 6.6) years. In the Homeless 2 study there were 141 participants, 69 in the DT group and 72 in the DT+E group. The DT group contained 78.2% men and the mean age was 38.4 (+/- 7.4) years. The DT+E group contained 66.6% men and the mean age was 37 (+/- 6.8) years.

Study design
The two studies were of the same design, that is, they were both prospective, randomised controlled trials. Details of the randomisation procedure were not reported. The length of follow-up was one year. The outcomes were assessed at baseline, and 2, 6 and 12 months. No information on the loss to follow-up was provided.

Analysis of effectiveness
It was unclear whether the analysis of the clinical study was conducted on an intention to treat basis. The primary outcome measure was abstinence. This was defined as persons abstinent, and weeks abstinent from all addictive drugs and alcohol at the completion of each phase of the study. The baseline comparability of the study groups was not discussed. However, significant differences in total sample characteristics between the Homeless 1 and 2 studies were found for several variables. More specifically, race (fewer African Americans in Homeless 2), veterans (fewer veterans in Homeless 2), age (participants were older in Homeless 2), education (patients had more years of education in Homeless 2), and homelessness (participants had been homeless longer in Homeless 2).

Effectiveness results
In the Homeless 1 study, the proportion of persons abstinent was:

- 25.8% for UC and 47.8% for EC at phase I completion;
- 29% for UC and 40.6% for EC at phase II completion; and
- 27.4% for UC and 33.3% for EC at phase III completion.

The average number of weeks abstinent was:

- 2.1 for UC and 3.8 for EC at phase I completion;
- 6.7 for UC and 10.3 for EC at phase II completion; and
- 14.4 for UC and 19.7 for EC at phase III completion.

In the Homeless 2 study, the proportion of persons abstinent was:

- 49.3% for DT and 73.6% for DT+E at phase I completion;
- 34.8% for DT and 44.4% for DT+E at phase II completion; and
- 27.5% for DT and 36.1% for DT+E at phase III completion.

The average number of weeks abstinent was:
3.9 for DT and 5.9 for DT+E at phase I completion; 
9.5 for DT and 13 for DT+E at phase II completion; and 
19.4 for DT and 23.1 for DT+E at phase III completion.

**Clinical conclusions**
The effectiveness analysis showed that better outcomes were obtained with more intensive programmes at intermediate follow-up points, but these differences reduced after one year. The differences between the groups failed to reach statistical significance.

**Measure of benefits used in the economic analysis**
The summary benefit measure was the number of weeks abstinent from all addictive drugs and alcohol at the completion of each phase of the study. This measure was derived directly from the effectiveness study.

**Direct costs**
Discounting was not relevant since the costs were incurred during one year. The unit costs and the quantities of resources used were not reported separately. The health services included in the economic evaluation were those associated with counselling, housing, work, administration and other expenses. Counselling covered clinical staff salaries and fringe, follow-up and re-engagement incentives, tracker salary, laboratory testing for urine toxicology screening, and societal or recreational vouchers. Housing included the money to buy houses for refurbishing, supplies used to refurbish houses, and utility costs. Work covered work therapy staff salaries, expenses of a training subcontractor, and client work therapy stipends. Administration included personnel salaries and fringe for the executive director, chief financial officer, administrative secretary, medical director, security staff, data entry staff and temporary help. Other expenses considered travel, space rental, utilities, rental equipment, vehicle maintenance, insurance, telephone, pagers, postage, personnel recruitment, license fees, printing, mileage and supplies. Some other categories of costs were not considered. For example, those related to crime attributable to the presence of drug addicted homeless persons, medical costs arising from drug addiction (e.g. emergency room visits or the transmission of diseases such as hepatitis or AIDS), and the loss of earnings due to lost employment. Similarly, research expenses were not included. Revenues (client rent and housing equity) were also estimated and subtracted from the total costs.

The cost/resource boundary of the study was that of the treatment provider. Resource use was estimated using actual data derived from the sample of individuals participating in the effectiveness study. The costs were derived from accounting records. The price year was 2000.

**Statistical analysis of costs**
The costs were treated deterministically.

**Indirect Costs**
The indirect costs were not considered.

**Currency**
US dollars ($).

**Sensitivity analysis**
Sensitivity analyses were not conducted.
Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The average cost per person was:

$3,741 for UC and $7,917 for EC in phase I;
$4,948 for UC and $11,543 for EC in phase II; and
$0 for both groups in phase III.

The average cost per person was:

$2,773 for DT and $3,441 for DT+E in phase I;
$3,612 for DT and $7,177 for DT+E in phase II; and
$4,047 for DT and $7,774 for DT+E in phase III.

Synthesis of costs and benefits
The average and incremental cost-effectiveness ratios were calculated to combine the costs and benefits of the programmes under evaluation.

The average cost per week abstinent was:

$1,781 for UC and $2,083 for EC in phase I;
$739 for UC and $1,121 for EC in phase II; and
$344 for UC and $585 for EC in phase III.

The incremental cost-effectiveness ratio with EC over UC was $2,459 in phase I, $1,832 in phase II, and $1,244 in phase III.

The average cost per week abstinent was:

$711 for DT and $583 for DT+E in phase I;
$380 for DT and $552 for DT+E in phase II; and
$209 for DT and $337 for DT+E in phase III.

The incremental cost-effectiveness ratio with DT+E over DT was $334 in phase I, $1,019 in phase II, and $1,007 in phase III.

Authors' conclusions
The implementation of more intensive treatments (enhanced care or day treatment plus experimental) for substance abuse among homeless persons led to short-term improvements in abstinence rates, but this trend was no longer statistically significant after one year. However, the incremental costs to achieve higher abstinence rates were not expensive from the perspective of the agency providing the treatment, and were within a reasonable range compared with other common societal interventions. The authors made some simple calculations using optimistic assumptions to assess the cost per life-year saved, which was $1,144 for day treatment plus experimental (DT+E) over day treatment (DT) and $1,273 for enhanced care (EC) over usual care (UC).
**CRD COMMENTARY - Selection of comparators**
The rationale for the choice of the comparators was clear. EC and DT+E were compared with a standard approach (UC for EC and DT for DT+E) in order to select the corresponding less intensive strategy for substance abuse treatment for homeless persons. The details of each approach were reported. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis of effectiveness used data coming from two randomised trials, the designs of which were appropriate for the study question. The patient samples used in the two studies were not comparable at baseline and the comparison was conducted within each study (UC versus EC; DT versus DT+E). However, the baseline comparability of the patient groups within each study was not discussed. As the primary studies had been published, little information on randomisation, the method of sample selection, the potential impact of confounding factors, and loss to follow-up, was provided.

**Validity of estimate of measure of benefit**
The summary benefit measure was specific to the intervention considered in the study. It would therefore be difficult to compare it with the benefits of other health care interventions. The authors noted that other aspects, such as stable housing, employment and the reduction in health care utilisation and criminal behaviour, should be assessed.

**Validity of estimate of costs**
The authors stated the perspective adopted in the study and a detailed breakdown of the cost items was provided. It appears that all the relevant categories of costs have been included. However, the unit costs and the quantities of resources used were not reported, which reduces the possibility of replicating the study results. The authors noted that some indirect costs were not considered and this represents a limitation to the validity of the analysis. The price year was reported, which will facilitate reflation exercises in other settings. Resource use was based on individualised data. The costs were treated deterministically and no sensitivity analyses were conducted. Therefore, the cost estimates were specific to the study setting.

**Other issues**
The authors did not compare their findings with those from other studies. They also did not address the issue of the generalisability of the study results to other settings. The external validity of the analysis was low. The study involved homeless persons requiring treatment for substance abuse, and this was reflected in the authors' conclusions. The authors noted that a strong limitation to the validity of the study was the fact that the societal value of reducing homelessness itself was not measured.

**Implications of the study**
The authors suggested that future studies should develop methods and data to provide a better measure of the societal benefits to communities of reducing the number of homeless persons with addictive drug problems.

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**Bibliographic details**
Other publications of related interest


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