Cost-effectiveness of assertive community treatment versus standard case management for persons with co-occurring severe mental illness and substance use disorders


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 health technologies studied were assertive community treatment (ACT) and standard case management (SCM) for those with severe mental illness and substance use disorders.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
People with co-occurring severe mental illness and substance use disorders. The economic analysis was carried out at the Cost-Effectiveness Laboratory, Dartmouth Medical School, New Hampshire, USA.

Setting
Community and hospital. The study was carried out within seven of New Hampshire's ten mental health catchment areas.

Dates to which data relate
Effectiveness and resource data were collected between 1989 and 1995. 1995 prices were stated.

Source of effectiveness data
The evidence for the effectiveness of ACT versus SCM was obtained from a single study.

Link between effectiveness and cost data
Costing was undertaken on the same study sample as that used to calculate the effectiveness of the competing treatments.

Study sample
306 patients aged between 18 and 60 years with a DSM-III-R diagnosis of schizophrenia, shizoaffective disorder, or bipolar disorder; an active substance use disorder according to DSM-III-R criteria; no medical comorbidities that would prevent participation in the study; without a diagnosis of developmental learning disability; and a willingness to provide written consent to participate in the study. 223 of these subjects were randomly assigned to either ACT or SCM. 74% were male, the average age was 34 at study entry, 96% white, 61% never married, and 63% received a high school education. 53.6% had a diagnosis of schizophrenia, 22.7% schizoaffective disorder, and 23.6% bipolar disorder. No
power calculation were stated. After three-year (six-monthly) follow-up the sample size fell to 193: 100 (ACT) and 93 (SCM). 11 refused to continue in the study, 7 died, 2 moved away, and 10 had inadequate costing information due to receiving treatment out of the area.

**Study design**
The study was a randomised controlled trial (multi-centre). No details of the randomisation process were provided. The duration of follow-up was 3 years during which period 20 were lost to follow-up.

**Analysis of effectiveness**
The analysis of the study was based on treatment completers only. The primary health outcomes were subjective quality of life ratings and Substance Abuse Treatment Scale scores (SATS). The groups were found to be comparable in age, sex, and prognostic features.

**Effectiveness results**
Both treatment groups experienced significant reductions in their substance use. SCM quality of life increased from 0.61 to 0.65 ($t=1.77$, $df=92$, $p=0.8$). ACT quality of life increased from 0.56 to 0.66 ($t=4.06$, $df=99$, $p<0.001$). SCM SATS scores improved from a baseline average of 2.8 to 4.9 over the three year period ($t=11.11$, $df=92$, $p<0.001$). ACT SATS scores improved from a baseline average of 2.8 to 5.1 over the three year period ($t=12.48$, $df=99$, $p<0.001$). Note: these ratings were not significantly different in the final rating period, nor were mean cumulative ratings over the three year period.

**Clinical conclusions**
Longitudinal analysis showed that SCM was more efficient over the first two years whilst ACT was significantly more efficient during the third year.

**Modelling**
OLS regression was used to predict average cost-effectiveness ratios. To model nonlinear trends, a random-effects model (REM) was used, implemented with the SAS Proc Mixed procedure.

**Measure of benefits used in the economic analysis**
Subjective quality of life (QOL) year details were provided from the patients' perspective. The instrument used was the Quality of Life Interview (Lehman, 1988). A modified range from 0 (terrible) to 1 (delighted) was used and weighted (cumulative) scores were derived based on the time spent on each rating.

**Direct costs**
Discounting was reported as 3% and 5% for costs and outcomes. 1995 prices were used. Direct costs from a state perspective included general health care costs (82.5% of study participants were receiving Medicaid and costs were obtained from Medicaid payment records), legal services (public expenditure records), and community services (homeless shelters, etc., provided from relevant service providers' financial records).

**Statistical analysis of costs**
Statistical tests of significance were carried out on costs.

**Indirect Costs**
Discounting was reported as 3% and 5% for costs and outcomes. 1995 prices were used. Indirect costs from a state perspective were calculated around informal care giving which was calculated from family member's input to the care
of study participants.

**Currency**

US dollars ($).

**Sensitivity analysis**

One-way sensitivity analysis was carried out on imputed data provided for informal caregiving costs as well as legal costs.

**Estimated benefits used in the economic analysis**

Quality of life figures are described in "Effectiveness Results" above.

**Cost results**

The three year mean total study costs per patient were $124,145 (SCM) and $118,078 (ACT).

**Synthesis of costs and benefits**

Ratios of cumulative quality of life years to total societal costs rather than of incremental cost-effectiveness were computed. Average quality of life ratios per $10,000 in societal costs were 0.24 (ACT) and 0.20 (SCM). Average quality of life ratios per $10,000 in treatment costs were 0.65 (ACT) and 0.45 (SCM) (chi squared=0.004, not significant). Discounting did not significantly alter the results. Sensitivity analyses showed that the use of imputed data for some informal caregiving costs and the episode approach to legal costs did not affect the results.

**Authors’ conclusions**

ACT and SCM were not significantly different in terms of cost-effectiveness over the three year study period. However, ACT efficiency appears to improve over time.

**CRD COMMENTARY - Selection of comparators**

The selection of SCM and ACT as comparators appears to have been justified.

**Validity of estimate of measure of benefit**

The estimates of quality of life may not be reliable as some concern exists in the literature regarding the subjective scores obtained from patients with SMI. For example, it has been reported that patients with mood disorders tend to give lower QoL scores than those with schizophrenia even though more objective methods found the opposite. Recent events may also unduly influence the scores obtained from patients. The authors did, however, give a rationale for their choice of instrument.

**Validity of estimate of costs**

Detailed information and analysis around both direct and indirect costings was provided.

**Other issues**

The authors utilised a wide range of analytical techniques and discussed their findings and the limitations surrounding them. Generalisability does not appear to have been addressed by the authors. No power calculations were provided in the determination of sample sizes. Activity and/or cost information around non-completers was omitted which may have introduced bias into the results. The study appears to have been biased towards white males, although this could be a feature of the conditions examined.
Implications of the study
The authors stated that the paper is the first to document social costs and outcomes for dual disorders over a three year period. Further research is required around the significant differences on costs and effectiveness in the third and final year of analysis, which have not been examined before.

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