Treatment costs for youths receiving multisystemic therapy for hospitalization after a psychiatric crisis


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 authors studied multisystemic therapy as an alternative to hospitalisation after a psychiatric crisis.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
To be included in the study, youths had to meet the American Academy of Child and Adolescent Psychiatry's level-of-care placement criteria for psychiatric illness, as determined by an independent physician employed by the Medical University of South Carolina (MUSC). The authors also reported that youths had to be aged between 10 and 17 years old, had to be Medicaid funded or have no health insurance, and had to have a non-institutional residential environment (i.e. family home, home of a relative, or a foster home). The authors also reported that pre-existing physical, intellectual, or mental health difficulties, with the exception of autism, did not exclude youths from the study. Further details were provided elsewhere (Henggeler et al., see Other Publications of Related Interest).

Setting
The setting was secondary and community care. The economic study appears to have been carried out in South Carolina, USA.

Dates to which data relate
The data for the effectiveness analysis were collected between 1995 and 1999. The resource data and prices also appear to have been collected during this time period.

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

Link between effectiveness and cost data
The costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
Of the 177 screened families that met the inclusion criteria, 160 agreed to participate in the study. This means that 10% of families refused to participate.
Study design
The authors reported that the study was a randomised clinical trial in which the youths were randomly assigned to the two treatment options. The outcomes were assessed during the 4 months post-referral and during the 12-month follow-up period. Assessments were conducted at five time points. Time 1 was within 24 hours of consent. Time 2 was shortly after the comparison youth was released from the hospital (with the paired multisystemic therapy case assessed at the same time). Time 3 was at completion of multisystemic therapy home-based services, which was an average of 4 months post recruitment (with the paired comparison case assessed at the same time). Time 4 was 6 months after time 3 and time 5 was 6 months after time 4.

Three families dropped out of the study before the first assessment. One youth, who had been assigned to the hospitalisation approach, died in an automobile accident shortly before the post-treatment period.

Analysis of effectiveness
The analysis of effectiveness was based on the 115 families who completed the study and were also on Medicaid.

Effectiveness results
See the 'Estimated Benefits Used in the Economic Analysis' section.

Clinical conclusions
When compared with standard care, multisystemic therapy was associated with marginally significant short-term improvements in externalising behaviours. However, it demonstrated no statistically significant effect on externalising behaviours in the long run. The global severity index (GSI) scores showed few between-group differences.

Modelling
Regression-based cost and outcome models were used to adjust for the fact that expenditures and outcomes can vary for many reasons unrelated to initial treatment decisions (examples being race and severity of symptoms).

Measure of benefits used in the economic analysis
The health benefits used were changes in externalising and internalising behaviour scores and GSI. The authors reported that youths' symptoms were measured from youths' and caregivers' reports on two instruments. These instruments were the GSI of the Brief Symptom Inventory, which was completed by the adolescent as a measure of emotional distress, and the Child Behaviour Checklist, which was completed by the adolescent's caregiver as a measure of the adolescent's internalising and externalising symptoms. Youths and caregivers made direct measurements. It appears that values have been recorded at time 1, time 3 and time 5.

Direct costs
The resource quantities and the costs were not reported separately. The authors reported that the direct costs associated with the programme were included in the analysis. These were reported to be for all inpatient, outpatient, pharmacy and other services. Medicaid costs were the source of the direct cost data. The costs were estimated from actual data. Discounting was not relevant. The study reported the average costs. The price data would appear to relate to 1995 to 1999.

Statistical analysis of costs
The authors carried out a t-test on the null hypothesis, that is, Medicaid expenditure was equal across the groups. The authors did not justify the test, nor did they state that the study was powered to detect a particular difference.
Indirect Costs
No indirect costs were reported.

Currency
US dollars ($).

Sensitivity analysis
A sensitivity analysis was carried out to assess the effect that the sum of the five top spending outliers in each therapy group had on the results of the analysis. The aim of the sensitivity analysis was to investigate the robustness of the models to variability in the data. A one-way simple sensitivity analysis was used.

Estimated benefits used in the economic analysis
The risk-adjusted outcomes from time 1 through time 3 (excluding outliers) showed that the average difference (standard error) in externalising behaviour score between the multisystemic group and the comparison group was -14.95 (8.37), (p=0.081).

The risk-adjusted outcomes from time 1 through time 3 (excluding outliers) showed that the average difference (standard error) in internalising behaviour score between the multisystemic group and the comparison group was -14.19 (9.26), (p=0.129).

The risk-adjusted outcomes from time 1 through time 3 (excluding outliers) showed that the average difference (standard error) in GSI between the multisystemic group and the comparison group was -0.03 (0.497), (p=0.954; 96 degrees of freedom).

The risk-adjusted outcomes from time 3 through time 5 (excluding outliers) showed that the average difference (standard error) in externalising behaviour scores between the multisystemic group and the comparison group was 3.29 (9.97), (p=0.743).

The risk-adjusted outcomes from time 3 through time 5 (excluding outliers) showed that the average difference (standard error) in internalising behaviour scores between the multisystemic group and the comparison group was -6.18 (9.67), (p=0.525; 93 degrees of freedom).

The risk-adjusted outcomes from time 3 through time 5 (excluding outliers) showed that the average difference (standard error) in GSI between the multisystemic group and the comparison group was -0.37 (0.428), (p=0.391).

Cost results
The mean (number of youths) Medicaid expenditure from time 1 through time 3 was $8,236 (+/- 6,860) (51) for the multisystemic therapy group, and $11,725 (+/- 5,065) (54) for the group receiving standard services (t-statistic 2.98, 103 degrees of freedom, p=0.004).

The mean (number of youths) Medicaid expenditure from time 3 through time 5 was $11,709 (+/- 13,396) (53) for the multisystemic therapy group, and $13,451 (+/- 16,351) (49) for the group receiving standard services (t-statistic 0.59, 100 degrees of freedom, p=0.556).

The authors noted that the value for Medicaid expenditure from time 1 through time 3 for the multisystemic therapy group did not include $10,276 of multisystemic therapy expenditures that were not billed to the South Carolina Medicaid programme (i.e. costs incurred during the treatment period that were paid for by the study). However, it was reported that these costs were included in the final cost-effectiveness calculations for the treatment period.

The risk-adjusted costs model estimated that from time 1 through 3 and from time 3 through 5, multisystemic therapy saved an average of $11,893 (time 1 - 3) and $400.19 (time 1 - 5) per youth, respectively. However, when the additional non-Medicaid treatment costs paid from grant funds ($10,276 per youth) were considered, the average savings of the
programme fell to $1,617 per youth during the treatment period.

**Synthesis of costs and benefits**
The costs and benefits were combined by investigating the cost associated with improvements in behaviours and the GSI. An incremental analysis was performed.

Between time 1 and time 3, a 1-point improvement in externalising behaviour was associated with a cost of $395 for youths receiving multisystemic therapy and $1,527 for youths receiving usual services.

Between time 1 and time 3, a 1-point improvement in internalising behaviour was associated with a cost of $385 for youths receiving multisystemic therapy and $1,309 for youths receiving usual services.

Between time 1 and time 3, a 0.1-point improvement in GSI was associated with a cost of $1,957 for youths receiving multisystemic therapy and $2,508 for youths receiving usual services.

No differences were observed in Medicaid costs or in clinical outcomes during the 12-month follow-up period.

**Authors' conclusions**
Among youths presenting with psychiatric emergencies, multisystemic therapy was associated with better outcomes at a lower cost during the initial post-referral period and with equivalent costs and outcomes during the 12-month follow-up period.

**CRD COMMENTARY - Selection of comparators**
It appears that the comparator has been chosen because, in the authors' own setting, it represented standard practice for youths experiencing a psychiatric crisis. You should decide if this is a widely used health technology in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis was based on a randomised clinical trial, which was appropriate for the study question. The study sample was representative of the study population, although this paper did not report whether or not the study groups were comparable at analysis. It would appear that the analysis of effectiveness has been handled reasonably. While the analysis was only carried out for treatment completers, only four (2.5%) families dropped out of the study (three before the first assessment). It should also be noted that the analysis was limited to patients receiving Medicaid, who were observed to be slightly less advantaged than the overall sample.

**Validity of estimate of measure of benefit**
The instruments used to derive measures of benefit were the GSI of the Brief Symptom Inventory and the Child Behavior Checklist. These instruments appear to have been appropriate.

**Validity of estimate of costs**
Given the cost perspective adopted, all the relevant categories of cost appear to have been included in the analysis. However, as the costs used were not documented in this paper, it is not possible to comment on whether or not all the costs relevant to these categories have been included in the analysis. The costs and the quantities were not reported separately. Details of resource use were not reported in this paper. The costs were taken from the authors' own setting. A statistical analysis of the prices was not performed. No additional analyses of costs were undertaken. The costs were extracted from billing records and were taken from paid claims. The dates to which the charges related appear to have been 1995 to 1999, but this was not stated explicitly.
Other issues
The authors appear to have made appropriate comparisons of their results with the findings from other studies. The authors recognised that this study had limitations in terms of the generalisability of the findings to other populations and treatments. They reported that, as the sample consisted solely of youths who were enrolled in Medicaid, the findings cannot be generalised to a more economically advantaged population. Although the authors do not appear to have presented their results selectively, it would have been useful had the results for all time periods been reported. The authors' conclusions reflect the scope of the analysis. The authors reported further limitations to their study. In particular, the fact that multisystemic therapy is a well-specified treatment with intensive quality assurance, so the findings cannot be generalised to other home-based treatment models.

Implications of the study
The authors suggested that there is a need to replicate the findings reported in this article.

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Other publications of related interest


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