Are community-based services more cost-effective than hospital-based services for children with behavioural disorders?

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Introduction

Hospital-based services have been criticised on the grounds that they are inaccessible, stigmatising, expensive, poorly integrated with community services, and less likely to produce health gains that generalise to other environments such as school (Nicol, 1994; Cunningham et al., 1995). If these criticisms were well-founded then we would expect community-based services to be a more cost-effective method of service delivery than in-hospital services. This paper summarises the results of an investigation into the relative cost-effectiveness of community versus hospital-based parent education groups for children with behavioural disorders. The full results have been published elsewhere (Harrington et al., 2000).

Methods

Parents of children aged three to ten years with behavioural disorder who had been referred to child and adolescent mental health services (CAMHS) in two health districts in the north of England were randomised to either community-based (n=72) or hospital-based (n=69) parent education groups. Outcome measures included parents' and teachers' reports of the child's behaviour, parental depression, parental criticism of the child, and impact of the child's behaviour on the family.

Information on the use of all services by both the child and their primary carer (usually the mother) over the 12-month follow-up period were collected during an interview with the primary carer. A service-use questionnaire was designed, based on data collection methods developed in a previous trial, to record information on inputs from all service providing sectors, including the NHS, social services, education, voluntary and private sectors (Byford et al., 1999). In addition, the costs of crèche facilities and travel to sessions were recorded.

All unit costs were estimated for the financial year 1998/99. Where possible, calculations used information from local service providers. Where local costs were unavailable and for some community services that add little to the total cost of care, national published unit costs were used (Netten et al., 1999; CIPFA, 1998; CIPFA 1999). For each parent education group, a cost per session was calculated using a bottom-up costing approach, based on time diaries that detailed staff time spent on face-to-face and non face-to-face contact, travel and supervision. Unit costs were derived from the midpoint of the relevant 1998/99 salary scales and included overhead elements and employers National Insurance and superannuation contributions. Unit costs of special needs education and classroom support workers were also calculated in this way.

All economic analyses were carried out on an intention to treat basis. Although costs were not normally distributed, analyses compared the mean costs in the two groups using standard t-test methods, with the validity of results confirmed using bootstrapping (Efron and Tibshirani, 1993). The advantage of this approach, as opposed to logarithmic transformation or conventional non-parametric tests, is the ability to make inferences about the arithmetic mean (Barber and Thompson, 1998).

Results

Sixty-one patients in the community group and 57 in the hospital group completed the service-use questionnaire at the final follow-up interview and were included in the economic evaluation. Table 1 details the total cost of the two groups over the follow-up period. No significant differences between the hospital and community groups were found in total costs per child (p=0.41), per primary carer (p=0.11) or in total (p=0.19). However, the hospital group tended to have lower costs, with the total cost per child being approximately 75% of that of the community group and the total cost per primary carer being 50% lower. In total, the cost of the hospital group was found to be 30% lower than the cost of the community group, a saving of over £1,500 per child over the period of the trial.

Table 1 Mean costs over the 12-month follow-up period (£)

	Community (n=61) Mean (SD)	Hospital (n=57) Mean (SD)	Difference in means (community – hospital) (95% CI)
Children			
Intervention	374 (322)	488 (511)	–115 (–272 to 43)
NHS psychiatric services	1379 (4054)	997 (2158)	382 (–814 to 1578)
Other NHS services	321 (648)	285 (498)	36 (–176 to 247)
Education services	1513 (4958)	761 (2613)	752 (–707 to 2212)
Social services	120 (350)	290 (1200)	–170 (–500 to 160)
Voluntary and private sector	29 (133)	10 (50)	18 (–19 to 55)
Total cost per child	3735 (7210)	2831 (4091)	904 (–1254 to 3062)
Primary carer			
NHS psychiatric services	360 (2241)	22 (53)	339 (32 to 1158)
Other NHS services	791 (1316)	550 (1105)	241 (–204 to 686)
Social services	29 (221)	0 (0)	29 (–29 to 87)
Private sector services	3 (18)	0 (0)	3 (–1 to 8)
Total cost per carer	1183 (2721)	572 (1120)	611 (–143 to 1365)
Total cost	4918 (7668)	3403 (4332)	1515 (–742 to 3772)

For the cost of NHS psychiatric services used by the primary carers, the data appear to be consistent with a significant difference in cost. However, it should be noted that the bootstrap results for this sector predicted substantial non-normality remaining in the distribution. Since the validity of the parametric test was not confirmed in this instance, the confidence intervals reported are for the cost difference generated by the bootstrap analysis (Briggs and Gray, 1999). No other significant sectoral differences in cost were found between the hospital and community groups and bootstrapping confirmed the validity of all other parametric tests.

The two groups did not differ significantly on any of the outcome measures at baseline or at the follow-up assessments and there were no significant effects of location of treatment on changes in any of the outcomes.

Conclusion

The present study did not support the hypothesis that a community-based service is more cost-effective than hospital-based treatment. It must be borne in mind, however, that the trial was powered on the basis of a significant difference in clinical outcomes. The sample size may have been too small to detect a significant difference in costs. Indeed, the actual cost differences found between the two groups were large, with the hospital group costing 30% less overall than the community group, suggesting a trend in favour of hospital-based services.

References

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Current projects in child and adolescent mental health

- The results of a study to assess the needs of children with severe and complex mental health problems will be available later in 2003. These young people often require multi-agency involvement over a long period of time. The project was undertaken in collaboration with the Department of Child and Adolescent Psychiatry at the University of Manchester. *Contact:* Sarah Byford or Barbara Barrett
- A randomised trial of cognitive-behaviour therapy and fluoxetine versus fluoxetine alone in persistent adolescent major depression is being carried out in collaboration with the Departments of Child and Adolescent Psychiatry at the Universities of Cambridge and Manchester. The study will include assessment of cost-effectiveness and cost-utility. *Contact:* Sarah Byford
- A follow-up study of suicidal children growing up is being undertaken in collaboration with the Department of Child and Adolescent Psychiatry at the University of Manchester. The study will include assessment of long-term psychosocial outcomes and costs. *Contact:* Sarah Byford
- A randomised controlled trial of group therapy compared to routine care for adolescents who repeatedly harm themselves is being undertaken in collaboration with the Department of Child and Adolescent Psychiatry at the University of Manchester. *Contact:* Sarah Byford or Barbara Barrett
- A quantitative survey and qualitative case study analysis are being undertaken to determine the costs and effectiveness of mental health provision for young people in custody and in the community in England and Wales, in collaboration with the University of Manchester. *Contact:* Sarah Byford
- The costs of child and adolescent psychiatric inpatient care are being explored in two collaborative studies. Unit costs have been estimated using data collected within the national study undertaken at the Research Unit of the Royal College Psychiatrists. Further exploration of costs and outcomes is underway with collaborators at the Institute of Psychiatry in eight English inpatient wards. *Contact:* Jennifer Beecham
- A randomised study of treatment for sexually abused girls attending the Maudsley and the Tavistock Clinic found similar outcomes for group and individual psychotherapy. The results of the subsequent economic evaluation, funded by the Department of Health, will be published in 2003. *Contact:* Paul McCrone