

Number 9, May 2003

# 9 Mental Health Research Review

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## Director's introduction

Martin Knapp

The 2003 issue of the *Mental Health Research Review* — like its predecessors — offers a number of short summaries of recently completed or current research by teams at the PSSRU and CEMH. Reading them makes clear (a) the variety of topics, (b) the centrality of economic methods — but always within multidisciplinary projects, (c) the quite rapid development of methods in mental health economics, and (d) the relevance of much of this work to policy and practice audiences and research communities in both the UK and elsewhere.

In this volume you will find **methodological pieces** (on sample size calculation; cost-effectiveness acceptability curves; unit cost calculations; developing cost-conscious clinical guidelines), **descriptions of service profiles** for people with schizophrenia in 15 countries, **results of economic evaluations** (on community-based parent education

groups; various primary care mental health services; various interventions for schizophrenia; and a range of interventions in different regions of the world), **literature reviews** (on costs of supporting people with dementia in nursing homes, and economic evaluations in the child mental health area), **long-term cost projections** for cognitive impairment, and **long-term follow-ups** (of children with antisocial behaviour, and of former long-stay hospital residents).

I am grateful to my colleagues for their efforts in writing these short accessible articles and notes, and especially to Jennifer Beecham and Claire Curran for enthusiastically and expertly editing this volume of the review, and to Nick Brawn for his consistently high standard of presentation. We hope you find it helpful — and please contact us, or see our websites, if you would like more information.

# Research on schizophrenia

Martin Knapp

Not surprisingly, the often devastating effects of schizophrenia on quality of life and the frequently high costs of treatment have drawn much attention. As new and apparently successful treatments are developed, attention has turned to the cost-effectiveness of different interventions. Research on the economic aspects of schizophrenia and its treatment is a major part of the programmes of work at both PSSRU and CEMH. Work has tended to focus on three areas:

- charting the resource utilisation patterns and associated costs for people with the illness;
- examining the wider economic circumstances and opportunities for people with schizophrenia (particularly looking at employment, income, and social exclusion); and
- evaluating the cost-effectiveness of treatments.

## Resources and cost patterns

Describing the service utilisation rates and associated costs for people with an illness is not an evaluation. Nor is it 'evaluative' to model the relationships between service use, costs and — for example — the needs and other characteristics of individual people. In neither case is the connection being made between inputs (services and costs) and outcomes (improvements in health and quality of life of people with an illness). Nevertheless, charting service use and cost patterns provides a useful platform for the discussion of policies and practices, and is often the starting point for planning an evaluation of alternative treatments.

At a macro level economists sometimes carry out cost-of-illness studies that measure at national or regional level the full economic impact of an illness. For example, Patel and Knapp (1998) offered a comprehensive (if somewhat approximate) costing of all mental health problems in England. Recently, a review was completed of schizophrenia cost-of-illness studies across the world. Common elements included the high reliance on inpatient services, the large but often unmeasured economic consequences for family members, and the small proportion of total cost accounted for by drugs (Knapp et al., 2003; Knapp and Simon, 2002).

At a micro level, focusing on individual users, recent work has looked at rates of use of antipsychotic medication, service utilisation and cost levels. The EPSILON study — a five-country programme of work that developed and tested research instrumentation — allowed a searching cross-country study of service use patterns by people with schizophrenia. (A list of recent publications from this study is on page 32.) The study found surprisingly wide cross-country variations in service use patterns, even after standardising for individual symptoms, needs and capabilities.

One of the most important influences on the costs in schizophrenia is symptomatic relapse. A study in Leicestershire has compared the costs for people with schizophrenia who did or did not relapse over a six-month period. The study found marked cost differences between the groups (Almond et al., 2003).

A study underway in Bulgaria with CEMH support is estimating the costs of supporting people with schizophrenia. Another ongoing study is charting service use and cost patterns across 15 countries (see p. 24). Anita Patel is the contact for both projects.

## Social exclusion

Many studies of people with schizophrenia have pointed to the very low rates of paid employment, the low levels of income and the all too frequent experiences of social marginalisation and isolation. Social exclusion — which includes all of these impacts — is a major challenge for people with severe mental health problems. Indeed, equity should be one of the most important aims of mental health policy worldwide, but remains elusive (McDaid et al., 2003).

A systematic review of the international evidence on social exclusion and mental health will begin in 2003, carried out jointly by the PSSRU and the Centre for the Analysis of Social Exclusion at the LSE. Findings will be reported in 2004.

## Cost-effectiveness

A core concern of many economists working in the health field is the cost-effectiveness of different interventions for particular health problems. In the schizophrenia field those interventions include psychosocial therapies, antipsychotic medications and reconfigurations of service arrangements. PSSRU and CEMH staff are actively evaluating treatment and service developments in all three areas.

Recently completed economic evaluations have looked at the cost-effectiveness of amisulpride and risperidone in eight European countries (Knapp and Spiesser, 2003), and of ziprasidone and haloperidol in another multi-country context (Healey and Knapp, 2003). An observational study of the cost-effectiveness of clozapine, risperidone and olanzapine found some differences between treatments (Lewis et al., 2001), and a modelling study explored the impact of clozapine treatment on suicide (Warner et al., 2003). A major national evaluation — CULASS — is looking at the class of atypicals compared with typicals. CEMH has recently completed a controlled mirror image study as part of the overall programme (which is primarily focused around an RCT). An international review of the economics evidence for atypical antipsychotics was included in a Task Force review by the World Psychiatric Association and published in *Current Opinion in Psychiatry* (Sartorius et al., 2002). An update will be published in the same journal in 2003. A separate systematic review of depot treatment could find no good economic evaluative evidence (Knapp et al., 2002b).

The COMO study, led by Sonia Johnson (UCL) is evaluating specialised training in dual diagnosis (serious mental illness plus substance misuse) issues for mental health key workers. The economic evaluation will compare service use and costs across two groups (trained or standard key workers). The Lambeth Early Onset (LEO) team is supporting people aged 16–35 in Brixton with a first or second episode of psychosis. An evaluation is looking at outcomes and cost-effectiveness over an 18-month period. Paul McCrone is the CEMH contact for both COMO and LEO.

The Schizophrenia Outpatient Health Outcomes (SOHO) study was launched in Europe in 2001. It is collecting data on over 10,000 people with schizophrenia across ten western countries (Haro et al., 2003). The PSSRU is helping to conduct the economic evaluation of the different drug and other treatments that are being provided to these people (Urdahl et al., 2003). The naturalistic design, combined with the large sample, makes this one of the most exciting studies ever conducted in the schizophrenia field.

The European Commission is funding a four-country randomised controlled trial to look at the effectiveness and cost-effectiveness of ‘adherence therapy’ for people with schizophrenia. The intervention is a psycho-educational therapy with the aim of encouraging people to take their medications. This major new study

(QUATRO) is underway in London, Verona, Leipzig and Amsterdam. CEMH is carrying out the economic evaluation. Another psychological intervention now being evaluated is cognitive remediation therapy, a therapy that aims to improve social functioning by reducing the cognitive deficits commonly associated with schizophrenia. An RCT in South London is led by Til Wykes (Institute of Psychiatry).

Recently an EC-funded trial has started in London, Rimini, Ulm, Zurich, Groningen and Sofia to test the effectiveness and cost-effectiveness of Individual Placement and Support (IPS), which places people in competitive employment and provides indefinite support to enable them to maintain that employment. The project is led by Tom Burns and Jocelyn Catty (St George's Hospital). The economic elements of the evaluation and context description are the responsibility of Adelina Comas-Herrera and Martin Knapp at the PSSRU.

A major focus of mental health services policy in many countries over the last two or three decades has been replacement of inpatient services with a range of community care arrangements. In a systematic review led by Tom Burns (St George's), PSSRU looked at the economic evaluation evidence for 'home treatment services' for people with serious mental illnesses. The review found enormous variation in the quality of research, and also that a great many effectiveness evaluations have neglected to look at cost-effectiveness. A number of recommendations were made for improving the economics evidence base (Catty et al., 2002; Healey et al., 2003).

## Overview

A comprehensive review of the economics evidence on the costs of schizophrenia and the cost-effectiveness of all currently available treatments and many service arrangements was recently substantially revised (Knapp et al., 2002c). Revisions made to the first edition (written three years previously) needed to be substantial given the welcome accumulation of new evidence. It is clear from the many other studies currently underway — including those in PSSRU and CEMH — that a further revision will be needed in a couple of years.

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# Adult mental health services in primary care

Paul McCrone

## Background

Those working in primary care settings have had increasing responsibility devolved to them since the late 1980s. Fundholding GPs emerged under the last Conservative government, and Primary Care Trusts now have a central role in commissioning services, including those for people with mental health problems. Primary Care Trusts are responsible for spending £45.3 billion on health care, of which £5.3 billion (11.85%) is allocated for mental health services (Glover, 2003). Although the bulk of this money is likely to be spent on hospital services there are incentives to develop services within primary care settings.

## Economic evaluations of primary care based mental health services

A number of interventions have been developed to treat mental health problems in primary care settings. The need to establish whether these are effective is clearly understood, but it is also crucial that cost-effectiveness (or relative cost-effectiveness) be demonstrated before such interventions enter widespread use. The CEMH has been, and is currently, involved in a number of economic evaluations of innovative service interventions, some of which are described below. (The names of project leaders are given — they are all based at King's College London, unless indicated otherwise.)

***Counselling for depression*** Widespread use has been made of counselling in general practice but there has been little evidence as to its cost-effectiveness. This trial was led by Sharon Simpson and Roz Corney from the University of Greenwich and compared depressed patients receiving GP care with those receiving GP care plus therapy from practice counsellors. Total service costs were not significantly different between the groups and there was only limited evidence of improved outcomes for the group receiving counselling relative to the control group (Simpson et al., 2003).

***Computer-delivered cognitive behavioural therapy for anxiety and depression*** In this randomised study, led by Judy Proudfoot (now University of New South Wales) and Jeffrey Gray, a computer programme — Beating the Blues, BtB — was compared to usual care from GPs. BtB consisted of an introductory video and eight sessions of cognitive behavioural therapy (CBT), usually accessed weekly by patients attending the GP surgery. Initial outcome results show that BtB results in significant improvements for anxiety and depression and in work and social adjustment (Proudfoot et al., 2003). Comprehensive measures of service use and lost employment were recorded for each group of patients before and after the intervention. Costs have been calculated and combined with outcomes in a cost-effectiveness analysis, the results of which will be available later in 2003.

***Treatments for chronic fatigue*** CBT and graded exercise have been compared with each other in a randomised trial that included patients from GP practices in London and the south of England. Patients receiving either of these two treatments were also compared to a group of patients receiving usual GP care plus a self-help booklet. The results of the study — led by Leone Ridsdale — have been submitted for publication and an economic evaluation is near completion. Baseline economic results have been published (McCrone et al., 2003) and these showed that the average cost of chronic fatigue over three months was £1906, with 90% of this figure accounted for by informal care and lost employment. Patients with the more severe chronic fatigue syndrome had costs that were on average £1406 higher than those with chronic fatigue.

***Cognitive behavioural therapy vs drug treatment for irritable bowel syndrome*** Irritable bowel syndrome affects around 17% of adults in the UK and can lead to relatively high levels of service use, with patients often referred to gastroenterologists. One efficacious treatment is the anti-spasmodic mebeverine, but there may be better ways of treating cognitive aspects of the syndrome. A recently completed randomised trial, led by Tom Kennedy, compared cognitive behavioural therapy plus mebeverine to mebeverine alone. The study measured service costs after treatment to see whether resource savings were generated. The results of the study will be published in a Health Technology Assessment report.

***Pharmacological treatment of mild to moderate depression*** Led by Tony Kendrick from the University of Southampton, this three-year study compares the use of fluoxetine to supportive care alone for primary care patients with mild to moderate depression. This is a particularly important topic, as adequate evidence does not yet exist for the effectiveness of SSRIs in the treatment of less severe depression. Cost-effectiveness and cost-utility analyses are being conducted and the results should be published after 2006.

***Primary-secondary care liaison*** Although not an intervention at the patient level, developing appropriate means of liaison between primary and secondary care staff is seen as essential for delivering effective patient care, particularly to those with more serious conditions. Shared care arrangements pose particular challenges for economic evaluations. The results of two recent studies will be published in 2003. The first of these, in Kensington, Chelsea and Westminster, was an observational study of the impact of different levels of shared care on patient outcomes and service costs. The other (the Link Study) was led by Richard Byng and evaluated the impact of a programme designed to improve the quality of communication between primary and secondary care workers.

### **Implications for local decision makers**

Most mental health care work for primary care teams remains with the so-called common mental health problems. The accumulating evidence suggests that psychological or pharmacological treatments can be effective but that there do not seem to be benefits in terms of reduced utilisation of health care resources. This is in stark contrast to the evidence on treatments for schizophrenia and bipolar disorder where effective treatment often results in reduced costs due to the impact on bed days. Where costs savings are apparent for more common conditions they are usually in the form of a reduction in lost productivity. Therefore, for the economy as a whole treatments such as SSRIs and CBT might well save costs by their impact on employment, but for the health care sector costs would most likely increase.

Whether treatments that cost more *and* are more effective than comparators are cost-effective is a value judgment that policy makers need to make. The article on page 39 discusses the use of cost-effectiveness acceptability curves to inform the decision making process. One particular challenge of this approach is to determine the clinical meaning of a unit change in any clinical outcome measure, such as the Beck Depression Inventory. Given the plethora of outcome measures that are available for any single disorder — let alone for all disorders seen in primary care settings — an alternative approach would be to use a generic measure of outcome such as the quality adjusted life year (QALY). This would allow cost-effectiveness acceptability curves for different conditions to be compared and in theory would allow for a more rational approach to priority setting. However, there are major concerns about the appropriateness of QALYs in mental health care evaluations (Chisholm et al., 1997). First, QALYs do not appear to be sensitive to changes in mental health status, and for some conditions change may take place over a long period. Second, the methods by which QALY



are calculated differ across studies, as do costs. QALYs may be useful for comparing two or more treatments within the same study, but we need to be cautious about making comparisons between treatments in different areas.

## Conclusions

Until recently, economic evaluations in mental health care have predominantly focused on services for patients with serious mental illness in secondary care settings. There is though an increasing amount of research being conducted in primary care and at the interface between primary and secondary care. New treatments are being developed for a number of conditions and results are encouraging. However, given that these treatments seem to result in increased health care costs, one of the main challenges (for economists *and* for primary care professionals) is to investigate the value of the outcomes that are attained and how these relate to the cost of producing them.

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## Other studies of adult mental health problems

### CBT for bipolar disorder

The aim of this Department of Health study, led by Dr Dominic Lam, is to evaluate a cognitive therapy for patients with bipolar disorder. Approximately 150 outpatients were randomly allocated to receive cognitive therapy or standard care. A parallel economic evaluation will seek to provide a comprehensive picture of resource use and cost with the aim of assessing the cost-effectiveness of the alternative interventions.

Contact: Paul McCrone

### Relapse prevention in psychosis

The Wellcome Trust has funded this RCT comparing (i) CBT and standard care for patients with psychosis who do not have a close carer, and (ii) CBT, family therapy and standard care for those with close carers. The principal investigators are Professors Philippa Garety and Elizabeth Kuipers (both Institute of Psychiatry). The primary outcome measures are rates of relapse and days in hospital over the two-year period. Service use and costs will be linked to outcomes via a cost-effectiveness analysis. Contact: Paul McCrone

### Evaluation of Health Living Centres

Two complementary evaluations of the UK's 400+ Healthy Living Centres, are underway. HLCs have a strong emphasis on health and mental health; activities include arts and crafts, after school clubs and community cafés. The first study, for the Department of Health, is led by the Tavistock Institute, with PSSRU input. The second evaluation, funded by the New Opportunities Fund, is led by the Tavistock Institute in association with four UK universities, the PSSRU at LSE and the All Ireland Institute of Public Health.

Contact: David McDaid

### Pharmaco-Economic study of Major Depressive Disorder in general practice

Funded by Lundbeck, this study was based on a clinical trial of the drugs Escitalopram and Venlafaxine. The analysis estimated differences in average indirect and direct costs for patients, and estimated through multivariate regression which patient-level factors were associated with variations in costs. Overall, the analysis suggested somewhat lower costs for the Escitalopram group, particularly when indirect costs were excluded. There were no significant quality of life differences between the two groups.

Contact: José Luis Fernández

# Twelve years on: outcomes and costs of deinstitutionalisation for people with mental health problems

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4 CEMH

## Background

In the mid 1980s the UK's Department of Health sponsored a programme of demonstration projects to establish models of community care for long-stay patients living in institutions, known as the *Care in the Community* programme. A parallel evaluation of costs and outcomes for over 400 people who moved to community services between 1986 and 1987 was undertaken by the PSSRU (Knapp et al., 1992). Here we report on the 12-year follow up of people with mental health problems. (See Cambridge et al., 2002 for results from the study for people with learning disabilities).

Of those users assessed while in hospital, we were able to trace 107 12 years later, of whom 68 (64%) had been assessed nine months after leaving hospital. We also identified 21 former hospital patients who had been discharged but who had not been assessed in the earlier evaluation. Prior to resettlement, these 128 users had been living in the same hospital for an average of 12 years.

## Service users' skills and behaviour

Since the initial discharge from hospital, there had been significant reductions in users' mobility, their ability to wash, bathe and dress, and in their appearance. Clarity of speech was thought to have deteriorated, but conversation and social interaction had improved. Ratings of co-operative behaviour had decreased and argumentative behaviour increased. The majority of residents were functioning quite well and had relatively few symptoms and behavioural problems but around a quarter of users were significantly impaired, and 10–15 per cent presented quite serious problems.

There was some evidence of an overall increase in symptoms and behaviour problems since leaving hospital. For example, a greater proportion of users were reported to be awake at night and there were marginally significant increases in the reported incidence of odd gestures and mannerisms, obsessiveness, depression and suicidal preoccupation. There was also a marginally significant increase in the proportion of residents showing a degree of confusion.

## Service users' views

A much higher proportion of users were satisfied with their community accommodation than with hospital, and very few wished to return, although the proportion of satisfied users had decreased a little since the nine-month follow up. There were, however, substantial minorities who were not happy with the degree of privacy offered and only half had positive relationships with neighbours. Relationships with staff were generally positive, but there was room for improvement. Many users in residential and nursing homes did not feel that they had choices in their lives.

## Social networks

The average size of social networks (23 contacts) compared favourably to that reported in other studies but they included mainly staff and other service users. Residents living in hospital or hostels and small group homes had fewer close and

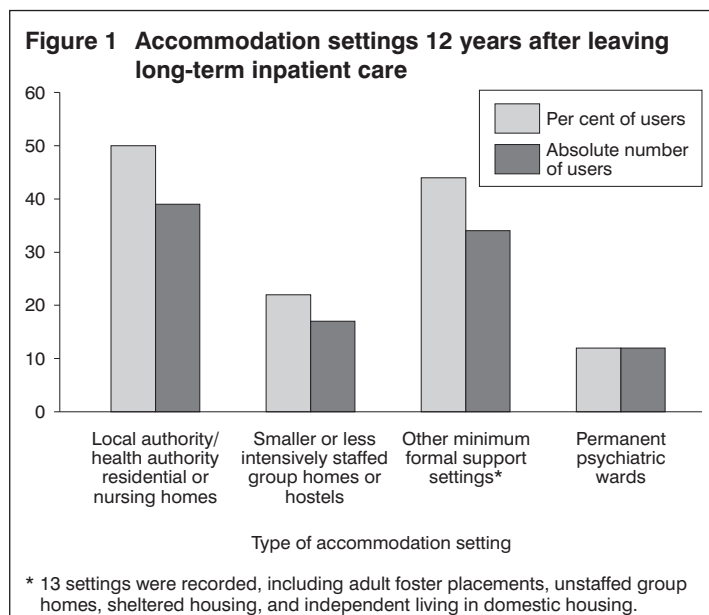
### Box 1 Characteristics of the sample

- 83% had a primary diagnosis of schizophrenia
- Average age at follow-up was 62 (range 35–93)
- 43% were aged over 65
- 50% were women and over three-quarters were single
- Over 80% were of white British origin

confiding relationships than those in other accommodation types. Residents in hostels and small group homes were least frequently in contact with their network members.

Residents living in private and voluntary sector accommodation received less help with domestic tasks, less material aid and less support for decision making compared to people living in accommodation managed by the public sector. They also had fewer confiding relationships. Conversely, they were less likely to be on the receiving end of critical behaviour from their network members.

### The costs of community care



People lived in a range of different accommodation types (see figure 1) and drew on a wide range of community services and supports. There were, therefore, many organisations involved in supporting people but there was little evidence to suggest that organisations worked together to create support packages. For example, people with mental health problems living in social services managed accommodation rarely used services provided by NHS Trusts.

The average weekly total cost per resident remained lower than the long-stay hospital costs. However, the range was considerably wider, suggesting a greater diversity of support arrangements. After standardising for users' skills and behaviour problems, costs in supported accommodation were

significantly lower than expected and costs for people living permanently in hospital were somewhat higher than expected.

The support costs could not be predicted from users' characteristics as measured in hospital 12 years earlier. There was no evidence of a relationship between cost and changes in skills, and only weak evidence to suggest that the more a person's behaviour had deteriorated over the 12-year period, the more costly is their package of care.

### Organisational issues

The study assessed the wider organisational aspects of community care, including care management. This was a requirement of the original pilot projects, and in mental health has developed through the implementation of the care programme approach (CPA). A key finding was that 12 years on, the CPA was poorly or rarely integrated with care management and many users were not included in the CPA arrangements. Common criticisms of the CPA included lack of psychiatric input and that the process was dominated by form filling.

Although joint working had developed considerably since the inception of the pilot projects, funding had become increasingly uncertain and lines of accountability were often fractured. Services that were best placed to respond to changing local and national management and policy environments were generally part of wider local service strategies for their client group. The most isolated services were those provided by voluntary and independent sector agencies.

One of the most pressing service development issues was the changing resource,

support and service coordination demands associated with an ageing clientele. Difficulties in staff recruitment, particularly in London and the south east of England were also identified.

## Conclusion

This evaluation demonstrates that in essential respects, community care is working for people with mental health problems with most users adequately supported and satisfied with their lives and accommodation. There was no evidence of changes in skills and only weak evidence of a small increase in symptoms and behaviour problems, suggesting that the long-term clinical and social outcomes were at least satisfactory. Overall, the care costs were lower than while users had lived in hospital or at the nine-month assessment. However, it is worrying that despite having lived away from hospital for over a decade, people were still interacting predominantly in a community within a community.

## Acknowledgement

We would like to thank Michelle Slead for drafting this article.

## Papers currently available from this research project

Beecham, J., Hallam, A., Knapp, M. et al. (2003) Twelve Years On: service use and costs for people with mental health problems who left psychiatric hospital, in preparation.

Cambridge, P., Carpenter, J., Beecham, J., Hallam, A., Knapp, M., Forrester-Jones, R. and Tate, A. (2002) Twelve Years On: the long-term outcomes and costs of deinstitutionalisation and community care for people with learning disabilities, *Tizard Learning Disability Review*, 7, 3, 34-42.

Carpenter, J., Cambridge, P., Tate, A., Forrester-Jones, R., Coolen-Schrijner, P., Beecham, J., Hallam, A., Knapp, M. and Wooff, D. (2003) Twelve Years On: the social and clinical outcomes of community care for people resettled from psychiatric hospitals, submitted for publication.

Forrester-Jones, R., Carpenter, J., Cambridge, P., Tate, A., Hallam, A., Knapp, M. and Beecham, J. (2002) The quality of life of people twelve years after resettlement from long-stay hospitals: users' views on their living environment, daily activities and future aspirations, *Disability and Society*, 17, 741-758.

Forrester-Jones, R., Carpenter, J., Coolen-Schrijner, P., Cambridge, P., Tate, A., Beecham, J., Hallam, A. and Knapp, M. (2003) The social networks of people with learning disabilities living in the community twelve years after resettlement from long-stay hospitals, submitted for publication.

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## Mental health law in Scotland

Angela Hallam, a former colleague at PSSRU and CEMH, now works in the Health and Community Care Research Team in the Health Department at the Scottish Executive. Her role is to develop a long-term programme of research into the operation of mental health law. The programme aims to evaluate the operation and impact of the Mental Health (Care and Treatment) (Scotland) Act, once it has come into effect.

The broad aims of the research programme are as follows:

- To provide information to support the implementation of the new legislation
- To contribute baseline information to understand the operation of the Mental Health (Scotland) Act 1984
- To evaluate the operation and impact of the new legislation
- To evaluate whether the aims of introducing the new legislation have been achieved, taking account of the expectations of all stakeholders.

A process of consultation in summer 2003 allows stakeholders to have a say in the development of the research programme. For more information about the programme or the consultation process, please email [Angela.Hallam@Scotland.gsi.gov.uk](mailto:Angela.Hallam@Scotland.gsi.gov.uk).

# Future employment prospects for antisocial children and adolescents: evidence from a longitudinal study of inner-London boys

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2 Institute of Criminology, University of Cambridge

Antisocial behaviour is a common feature of child and adolescent development. While most adolescents cease their involvement in antisocial activities on reaching adulthood, a small but significant minority — estimated to be less than 10% of the adolescent population — will follow a persistent course of antisocial development (Moffitt, 1993). Serious conduct problems exhibited at primary school age are a significant risk factor for the development of persistent antisocial traits in later years (Moffitt, 1993; Farrington, 1995). A recently conducted survey of psychiatric morbidity among children and adolescents in Great Britain estimated that 7% of boys and 3% of girls could be classified as having a medically recognised conduct disorder.

It is tempting to view child and adolescent antisocial behaviour as primarily a public externality issue. Children with more serious antisocial tendencies can impose considerable costs on public institutions and households over time (Scott et al., 2001).

While the wider social impacts of antisocial development are hard to ignore, it is easy to lose sight of the implications for young people themselves. Children who show signs of serious conduct problems at primary school age are significantly more likely to possess characteristics in early adulthood that will limit their economic and personal advancement. They are less likely to gain formal qualifications (Rutter et al., 1998), for many a legacy of a limited ability to learn, and are more likely to truant repeatedly or be permanently excluded from school. Children with an identified conduct disorder at an early age are also more likely to go on to receive a criminal conviction in their adolescent and adult years (Farrington, 1995). Poor schooling outcomes and possession of a criminal conviction may both adversely affect long-term employment prospects (Behrman and Taubman, 1989; Walfogel, 1994; Fletcher, 1999).

The PSSRU is currently researching the long-term adult consequences of mental health and behavioural problems in childhood and adolescence, using a range of data sources. The primary focus is on economic outcomes, including employment, earnings, and costs imposed on the public sector. One strand of work uses data from the Cambridge Study of Delinquent Development (CSDD) to estimate the strength of associations between differing pathways of antisocial development and a series of labour market outcomes measured at age 32.

## The Cambridge Study in Delinquent Development

The CSDD is a prospective longitudinal study of the development of delinquency and antisocial behaviour in 411 boys from a working class area of south London (West and Farrington, 1977; Farrington, 1995; Farrington, 2001). The participants have been studied since 1961–62 when they were eight years old and at various points during childhood, adolescence and early adulthood. The last completed follow-up was at age 32. Information on antisocial development was drawn from professionally administered teacher and peer ratings of child behaviour at school at age ten and criminal convictions data.

The sample consisted mainly of boys registered with one of the six participating state primary schools, within a one-mile radius of a locally based research office (n=399). A further group of boys (n=12) was recruited from a school for children with learning disabilities in order to make the sample representative of



the population of eight year old males living in the area at the time. Most of the boys left school at age 15.

### **Adult labour market consequences of child and adolescent antisocial behaviour: the main findings from the CSDD**

All the findings summarised here are based on the econometric modelling of the CSDD data. Each of the estimated relationships between child and adolescent antisocial development and the various labour market outcomes control for childhood social background, IQ, and the presence of attention deficit problems and hyperactivity. The findings will not necessarily apply to an equivalent female cohort or to children drawn from other social backgrounds. Moreover, the relationships found may be a function of the cohort examined and therefore not transferable across different generations. These issues aside, the results offer some interesting insights:

- Strong antisocial tendencies observed at age ten and throughout the adolescent years were not shown to have a discernable association with an individual's earnings capability in early adulthood (age 32).

However:

- Boys identified as having serious antisocial tendencies between the ages of ten and 16 were predicted to have a 32% chance of experiencing long spells of unemployment (one year) over the five years prior to age 32 compared to only a 13% chance for those boys showing no signs of serious antisocial tendencies during childhood and adolescence. (All the predictions presented here hold other important determinants of employment outcome at their average level across the cohort.)
- Boys identified as having serious antisocial tendencies between ten and 16 years were also predicted to have a 23% chance of experiencing long spells of unemployment or employment in low skilled work at age 18 *and* age 32. Boys showing no signs of serious antisocial tendencies during childhood and adolescence were predicted to have only a 7% chance of experiencing these outcomes.
- Even though childhood and adolescent antisocial behaviour was not found to be associated with a lower earnings capability *per se*, the *expected* level of earnings from employment at age 32 (average earnings weighted by the predicted likelihood of employment) for boys showing persistent behavioural problems was only 68% of the expected earnings predicted for the remainder of the cohort.

### **Concluding remarks**

The evidence from this study suggests that young people presenting with serious and persistent antisocial behavioural problems may expect to earn significantly lower incomes from employment, due largely to lower rates of workforce participation. The evidence also points to a significantly higher risk of antisocial boys experiencing poor employment outcomes at both ages 18 and 32 as well as long spells out of work over a five-year period prior to age 32. These outcomes will in turn contribute to a higher risk of social exclusion. They may also be self sustaining: long periods of unemployment are known to affect future employment chances and earnings potential. Moreover, lengthy periods of unemployment may also serve to reinforce existing tendencies towards increased levels of crime with its attendant costs to society.

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### **Predictors of service costs of adults who received care for depression in childhood**

Depression in childhood or adolescence often has morbidity implications continuing into adulthood, generating needs for specialist services and support. A recent paper estimated the patterns of service use and costs in adulthood of former patients, and comparisons were made between those people with and without comorbid conduct disorder in childhood. This next phase of the project (funded by the Department of Health) will be to conduct multivariate analyses to identify the characteristics of children, and of treatment received, which are best able to predict future costs.

Contact: Paul McCrone.

#### **Reference**

Knapp, M., McCrone, P., Fombonne, E., Beecham, J. and Wostear, G. (2002) The Maudsley follow-up of child and adolescent depression III: Impact of co-morbid conduct disorder on service use and costs in adulthood, *British Journal of Psychiatry*, 180, 19–23.

A number of other studies undertaken at CEMH and PSSRU explore the adult consequences of childhood mental health problems, looking at services and costs as well as other outcomes. Contact: Martin Knapp.

### **Conference announcement**

#### **Sixth International Conference of ENMESH: Inclusion and Mental Health in the New Europe 3–5 September 2004, London**

Key speakers: Norman Sartorius, Judi Chamberlin, Benedetto Saraceno

For further information: [www.enmesh2004.org](http://www.enmesh2004.org) or email [enmesh2004@iop.kcl.ac.uk](mailto:enmesh2004@iop.kcl.ac.uk)  
European Network for Mental Health Service Evaluation

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

Sarah Byford

## **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.

|                              | Community<br>(n=61)<br>Mean (SD) | Hospital (n=57)<br>Mean (SD) | Difference in means<br>(community – hospital)<br>(95% CI) |
|------------------------------|----------------------------------|------------------------------|---|
| <i>Children</i>              |                                  |                              |   |
| 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)  |
| <b>Total cost per child</b>  | <b>3735 (7210)</b>               | <b>2831 (4091)</b>           | <b>904 (-1254 to 3062)</b>                                |
| <i>Primary carer</i>         |                                  |                              |   |
| 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)   |
| <b>Total cost per carer</b>  | <b>1183 (2721)</b>               | <b>572 (1120)</b>            | <b>611 (-143 to 1365)</b>                                 |
| <b>Total cost</b>            | <b>4918 (7668)</b>               | <b>3403 (4332)</b>           | <b>1515 (-742 to 3772)</b>                                |

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.

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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



# Economic evaluation of child and adolescent mental health services: preliminary results of a systematic review

Renée Romeo, Sarah Byford and Martin Knapp

## Introduction

A comprehensive review of the international literature a few years ago revealed no more than a handful of economic evaluations of interventions for mental health problems in childhood and adolescence, and most were found to be methodologically weak (Knapp, 1997). To assess recent developments in the economic evaluation literature since this review, a systematic search was undertaken and some preliminary findings are reported here.

## Search strategies

A range of electronic databases were searched using a predefined search strategy. Published evaluations of services for children or adolescents with mental health problems were included in the review if they included assessment of both costs and outcomes or costs alone.

## Findings

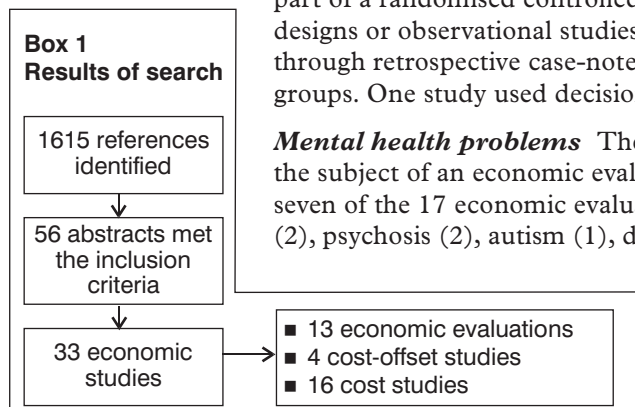
The search results are summarised in box 1. From the 56 abstracts that met the inclusion criteria for the study, 33 papers were found to include assessment of both costs and outcomes or costs alone.

**Method of economic evaluation** Seventeen studies included assessment of both costs and outcomes. Thirteen could be classified as full economic evaluations, most commonly cost-effectiveness analyses employing a large range of different disease specific scales. Cost-utility analysis, which involves measuring outcomes in terms of quality adjusted life years gained, was only undertaken in one study.

Four studies were classified as cost-offset studies, which involve the comparison of costs and outcomes that are easily converted into monetary valuations. For example, the total cost of a new intervention may be compared to the savings that result from changes in proxy outcomes such as inpatient stays or crimes committed. These studies tend to ignore user-focused outcomes, such as clinical status, quality of life, or wellbeing, and thus cannot be classified as full economic evaluations. Cost-offset studies are often incorrectly classified as cost-benefit analyses, where *all* costs and outcomes are valued in monetary terms.

**Study design** Four of the seventeen economic evaluations were carried out as part of a randomised controlled trial. More common were quasi-experimental designs or observational studies, carried out prospectively (seven studies) or through retrospective case-note review (five studies), often with matched control groups. One study used decision analysis to model costs and benefits.

**Mental health problems** The most common mental health area found to be the subject of an economic evaluation was behavioural disorders, the focus of seven of the 17 economic evaluations. Other areas included depressive disorders (2), psychosis (2), autism (1), developmental disorders (1), psychosomatic disorders (1) and co-morbid substance use (1). The remaining studies evaluated services that were not specific to one particular condition.



**Interventions** A large range of interventions were evaluated, including drug therapies, psychological therapies, skills development, parent training, social work support, psychoeducational services and electroconvulsive therapy. A number of alternative methods of delivering interventions were evaluated including individual versus group, hospital versus community, home versus community and day versus residential care. Two studies evaluated alternative methods of delivering child and adolescent mental health services in general, rather than specific interventions, and one study looked at different methods of influencing the motivation of therapists.

**Common methodological problems** Many of the economic evaluations included in this review suffered from methodological limitations. The majority involved observational study designs, often using data collected retrospectively from case notes, increasing the possibility of biased sampling and inaccuracy in the data. Although matched control groups were common, this method of reducing bias may not always be as successful as randomisation. Sample sizes were generally small and unjustified, thus increasing the danger of having inadequate statistical power to detect meaningful differences as significant in statistical analysis. The chosen perspective of many of the studies was narrow, often limited to the service provider, ignoring the impact of interventions on the cost of services provided by other agencies or sectors in society or the impact on patients and their families. Finally, few studies included any assessment of quality of life, thus making it impossible to compare the results across a broad range of services, which would better inform resource allocation decisions.

## Conclusion

This review of economic evaluations of services for children and adolescents with mental health problems shows that an increasing number of such evaluations are being undertaken, but that numbers are still small and studies are still suffering from a number of methodological weaknesses. Detailed results of the systematic review will be available later in the year.

## Reference

Knapp, M. (1997) Economic evaluations and interventions for children and adolescents with mental health problems, *Journal of Child Psychology and Psychiatry*, 38, 1, 3–25.

### Further publications in the economics of child and adolescent mental health care

Beecham, J., Chisholm, D. and O'Herlihy, A. (2002) The costs of child and adolescent psychiatric inpatient units, in A. Netten and L. Curtis, *Unit Costs of Health and Social Care 2002*, PSSRU, University of Kent at Canterbury, 21–23.

Knapp M., McCrone, P., Fombonne, E., Beecham, J. and G. Wostear (2002), The Maudsley long-term follow-up of child and adolescent depression. 3. Impact of comorbid conduct disorder on service use and costs in adulthood, *British Journal of Psychiatry*, 180, 19–23.

Kapil, S., Taylor, E., Beecham, J. and Byrne, P. (2002) Pathways to care in children at risk of attention-deficit hyperactivity disorder, *British Journal of Psychiatry*, 181, 43–48.

## **Evaluations of interventions for chronic health problems with psychological impacts**

### **Evaluation of the impact of carer information and support on patients, carers and service utilisation following hospital discharge after stroke** *Funder: NHS Executive*

*Contact: Anita Patel Principal investigator: Professor Lalit Kalra, GKT School of Medicine*

This recently completed RCT included 300 carers of disabled stroke patients following discharge from stroke rehabilitation. The two interventions consisted of a) formal training of carers in basic rehabilitation techniques and b) early support from a voluntary carer organisation that continued after discharge. Preliminary analyses show that both interventions were associated with better quality of life for patients and caregivers and reduced burden of care. Training carers also had a significant effect on reducing the length of hospitalisation and the costs associated with stroke care.

### **Economic evaluation of intermediate care schemes in Lambeth, Southwark and Lewisham**

*Funder: Lambeth, Southwark & Lewisham Health Authority*

*Contact: Anita Patel Principal investigator: Ms Judy Foster, GKT School of Medicine*

This recently completed evaluation of three intermediate care services showed large variations in staff activity, patient case-mix and the cost of care inputs. Functional ability, diagnosis and demographic factors did not explain the wide cost variations between patients. The overwhelming factor that determined average costs was the patient's length of stay on the scheme; further work is required to identify the factors that determine length of stay.

### **Effective and cost-effective rehabilitation for knee pain in a community population**

*Funder: Arthritis & Rheumatism Council*

*Contact: Anita Patel Principal investigator: Dr Mike Hurley, King's College London*

This cluster randomised trial involving 30 general practices is investigating the cost-effectiveness of a rehabilitation package that exercises the quadriceps and offers additional self-care advice and coping strategies in order to address the physical, psychological and social consequences of knee osteoarthritis. The primary end-point for follow-up is six months after the intervention, but an additional follow up after two and a half years will assess the longer-term impact of the intervention.

### **Randomised controlled trial of an arthritis self-management programme in primary care** *Funder: MRC*

*Contact: Anita Patel Principal investigator: Dr Marta Buszewicz, University College London*

This small group intervention involves lay facilitators, who themselves have arthritis, using a structured programme that aims to improve participants' sense of control over their disease. Over 800 patients have been recruited to the study nationally. Quality of life and costs for those who receive the intervention will be compared with people receiving an information booklet.

### **A randomised controlled trial of cognitive behaviour therapy for people with Type I diabetes mellitus and persistent sub-optimal glycaemic control** *Funder: Department of Health*

*Contact: Anita Patel Principal investigator: Dr Khalida Ismail, Institute of Psychiatry*

Type 1 diabetes mellitus is a chronic condition in which sub-optimal control increases the risk of complications and early death. Diabetes absorbs around 5% of the NHS budget. This recently started three-year study aims to examine the cost-effectiveness of CBT and motivational interviewing techniques as compared to usual care, for patients with sub-optimal glycaemic control.

### **Neuroprotection and Natural History in Parkinson Plus Syndromes** *Funder: European Commission*

*Contact: Paul McCrone Project coordinator: Professor Nigel Leigh, Institute of Psychiatry*

This randomised-controlled trial compares the use of riluzole to placebo in the treatment of multiple system atrophy and progressive supranuclear palsy. These conditions are similar to Parkinson's Disease, although are more severe with substantially shortened survival time. Approximately 750 patients have been drawn from centres in Germany, France and the UK. Cost-effectiveness and cost-utility analyses will be conducted.

### **Headache Study** *Funder: Medical Research Council*

*Contact: Paul McCrone Principal investigator: Dr Leone Ridsdale, Institute of Psychiatry*

This observational study compares patients who consult GPs for headache with those who are referred to specialists. Patient outcomes include headache symptoms, disability, psychological status and satisfaction with care. The economic cost of headache will be calculated and links between patient outcomes and resource use explored.

### **Prescribing of Sildenafil (Viagra) in high income countries** *Funder: Pfizer*

*Contact: Sara Northey Principal investigator: Dr Ursula Werneke, Homerton Hospital, London*

This research aims to review the implementation of the NHS criteria for severe psychological distress in different clinical settings and subsequent Sildenafil prescribing patterns. A Delphi consensus panel will investigate attitudes towards prescribing for erectile dysfunction (ED) in psychiatrists, urologists and GPs. The cost-effectiveness of ED treatment for patients with psychological distress will be considered.

# Economic evaluation and services for people with learning disabilities

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## The costs of village communities and other community-based residential supports

There is a growing volume of research on the relative cost-effectiveness of different types of residential supports for people with learning disability. However, little reliable data are available about residential or village communities. This evaluation compared the costs of living in village community settings (86 people), in NHS residential campuses (133 people) and in dispersed, community-based housing schemes (281 people). Data on the complete service package received by each study participant were used.

Wide cost variations were found. Multivariate analysis revealed that higher costs were associated with supporting people with greater disability and more severe challenging behaviour, younger users, males and people who had not moved from NHS hospitals. Smaller facilities were more expensive. More sophisticated within-setting service processes were associated with higher costs, although systematic arrangements for staff supervision and training had a negative effect on cost. As different setting types were found to be appropriate for different people, service developments should continue to include a range of residential options.

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Hallam, A., Knapp, M., Jarbrink, K. et al. (2002) Costs of village community, residential campus and dispersed housing provision for people with intellectual disability, *Journal of Intellectual Disability Research*, 46, 5, 394–404.

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## Benefit Groups and Resource Groups for people in staffed accommodation

Purchasers and providers employ a variety of tools to inform their decision-making. One such approach is the NHS Health Care Framework, which classifies service users' needs using Health Benefit Groups and interventions using Healthcare Resource Groups. This paper examines whether benefit groups and resource groups could be developed for people with learning disabilities. The project used data from a survey of 2093 adults with learning disabilities living in staffed accommodation (mainly managed by NHS Trusts) and service utilisation data and costs for a sub-sample of 930 clients. The NHS Information Authority funded the project.

The clients were classified into nine Benefit Groups (BGs) by applying cluster analysis to their scores on the Learning Disability Casemix Scale. Ninety-six Resource Groups (RGs) were constructed based on likely packages of care (combinations of accommodation, day activity and community service types) and similar costs. All nine BGs and 61 of the RGs were present in the sample but only 34 packages of care (RGs) were used by more than ten people.

Both the Benefit Groups and the Resource Groups had intuitive meaning. Statistical analysis showed that they are meaningful ways of classifying learning disability and challenging behaviour needs, and support costs.

### Reference

Comas-Herrera A., Knapp M., Beecham J., Pendaries C. and Carthew R. (2001) Benefit Groups and Resource Groups for adults with learning disabilities in residential accommodation, *Journal of Applied Research in Intellectual Disabilities*, 14, 120–140.

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### **Outcomes and costs: semi-independent living and staffed group homes**

This research will compare a range of lifestyle outcomes (such as independence, choice and social inclusion) for people with mild to moderate learning disabilities. Forty adults living in each type of accommodation, matched on a range of personal and setting characteristics, will be included. The costs of staff support, accommodation and other services will also be compared across the groups. This research is undertaken in partnership with the University of Wales College of Medicine and Lancaster University and is funded by the Wellcome Trust.

*Contact:* Renée Romeo

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### **A longitudinal study of behaviour problems in young people with severe learning disabilities**

A representative sample of 11–17 year olds with severe learning disabilities, first studied in 1996–97, will be re-assessed to explore changes in the type and severity of behavioural problems. Changes in service utilisation patterns (costs) since the first assessment will also be explored. The study is undertaken with Oliver Chadwick at the Institute of Psychiatry and is funded by PPP Medical Healthcare.

*Contact:* Jennifer Beecham

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### **Neuroleptics for adults with aggressive challenging behaviour and learning disabilities**

This study seeks to explore which treatment provides the best value in managing behavioural problems in people with learning disabilities in a three-armed parallel design randomised trial of placebo, haloperidol and risperidone. Short- and longer-term outcomes will be compared. Cost-effectiveness analysis will compare changes in aggressive behaviour and total costs, supplemented with a cost-consequences analysis. The study is undertaken with the MRC Collaborative Group and is funded by NHS Health Technology Assessment Programme.

*Contact:* Renée Romeo

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### **An evaluation of Person Centre Planning (PCP) for people with learning disabilities**

To evaluate the impact of PCP, information will be collected on users' characteristics, needs, and quality of life over two years. The study will also define and cost each participant's service package prior to the introduction of PCP and then following its implementation. Information on the usefulness of PCP and its impact on users' lifestyle will be gathered. The project is undertaken with Lancaster University and the Community Care Development Centre, King's College London. The Department of Health funds the project.

*Contact:* Renée Romeo



# **Service use profiles of patients with schizophrenia or schizoaffective disorder across 15 countries**

Anita Patel

The past few years have seen an increasing number of multi-national evaluations of healthcare interventions. The advantages of such studies include larger sample size, faster recruitment rate, broader sampling and meaningful sub-group analyses (Spilker, 1990; Lindquist et al., 2000). Challenges related to the logistics of running such complex trials and the interpretability of *clinical* outcomes across different settings and patient groups have been fairly well documented but conducting concurrent economic evaluations creates a new set of challenges. This paper reports some preliminary findings from a multi-national study of treatment patterns for people with schizophrenia or schizo-affective disorder from 15 different countries and highlights some of the issues that multi-national studies face above and beyond those faced by single country studies.

## **Sample**

The sample was drawn from 53 centres (psychiatric hospitals, psychiatric wards of general or university hospitals and psychiatric outpatient clinics) across 15 countries. Patients presenting with acute exacerbation of schizophrenia or schizoaffective disorder were eligible for entry into the study if they had a history of at least one prior hospital admission or documented evidence for acute psychotic exacerbation in the previous three years. A total of 381 patients were recruited, with enormous variations in sample size ranging from 89 in Germany to one in Holland. A range of clinical, economic and quality of life measures were collected for each patient.

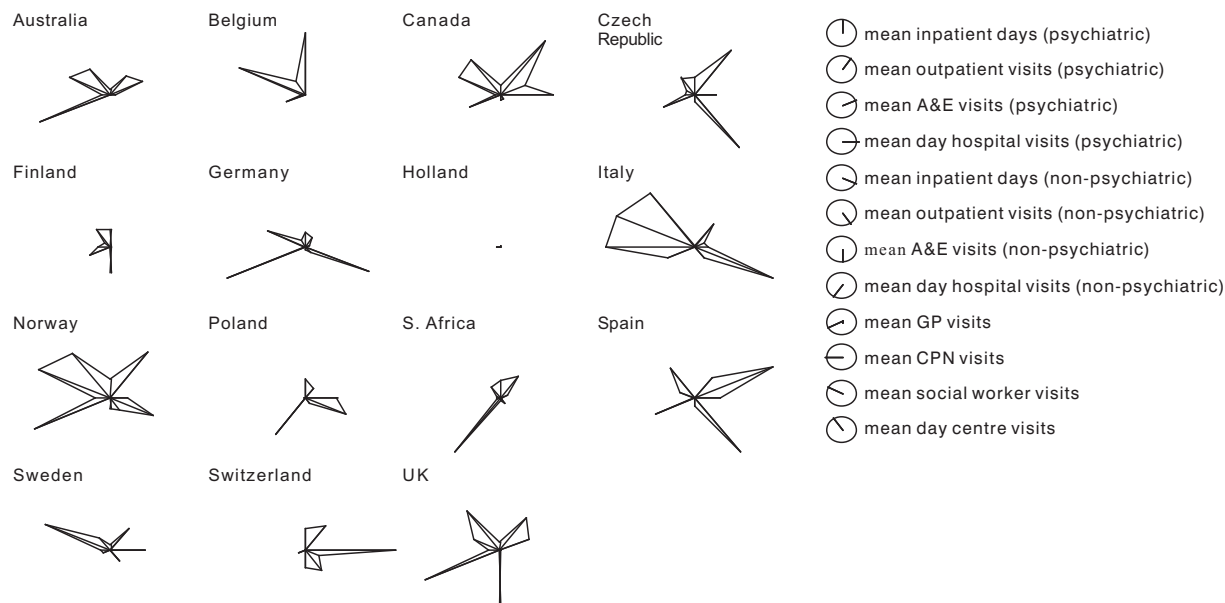
## **Service use patterns**

A specially adapted version of the Client Services Receipt Inventory (CSRI) (Beecham and Knapp, 1992) was used to collect data on psychiatric and non-psychiatric inpatient, outpatient and community-based health/social care service use over a retrospective period of three months.

The data showed notable variations in the services received by patients between different countries. The proportion of patients in each country who reported using at least one of the 15 given categories of health or social care services ranged between 69–100%. The proportion of patients using inpatient services ranged between 23–100% between countries, and average length of stay was equally variable (range 7–76 days). Take-up of community-based services also differed across countries: 0–75% seeing community psychiatric nurses, 0–46% seeing social workers and 0–75% seeing a general practitioner. Multi-national evaluations of mental health care can be particularly complex to conduct and interpret due to the plethora of health and social care services that make up patients' treatment packages.

In order to gain an overview of treatment patterns between countries, star plots were constructed to graphically represent the service combinations in each country (figure 1). Each country's star plot is formed of a series of lines stemming from the origin. The angle of each line represents a particular service (see key), and the length of each line represents the country-level mean amount of use of that service. For example, a vertical positive line represents the mean number of psychiatric inpatient days, and the similarity in the length of these lines for Norway and the Czech Republic reflect that they had similar mean

**Figure 1 Star plots summarising variation in service use patterns across different countries**



lengths of stay (28 and 26 days respectively), whereas the UK has a much shorter vertical line representing a lower mean of 17 days. These visual representations show clearly that although the use of psychiatric inpatient services is similar between Norway and the Czech Republic, for example, the former makes much greater use of other community-based services (represented by lines to the left of the origin).

#### **Box 1 Potential sources of variation in multi-national data**

##### **At the national (macro) level**

- political and legal framework
- cultural differences (e.g. attitude to mental health, stigma v. acceptability)
- financial (e.g. per cent of health budget spent on mental health)
- legal and policy framework (e.g. treatment near home, least restrictive environment)
- funding mechanisms (social insurance or other)

##### **At the local level**

- financial deployment mechanisms and mixed economy balance
- comparative voice of professional bodies (e.g. clinical vs social care)
- local philosophy/policy (implementation of national policy)

##### **At the client (micro) level**

- socio-demographics
- severity of illness (e.g. symptoms and functioning)
- service supply (availability) and demand (access)

These simple star plots show that there although there are some between-country similarities in the overall pattern of service use (for example, between Australia and the UK, and Canada and Norway) there are many differences — differences that may distort results if data were pooled together for analysis, as is often done in multi-national studies. Such between-country differences can arise from a variety of factors (box 1).

#### **Unit costs**

Collating and comparing service use data between countries is difficult enough given the complex mix of sources of variation. Layering these data with unit costs presents a whole new set of challenges.

The estimation of within-country centre-specific unit costs, although ideal, can be beyond the scope of many studies. A fairly pragmatic approach was taken for this study. First, we aimed to collect country-specific *national* unit costs (rather than local or facility-specific costs). This had the potential advantage of producing more generalisable outcomes. Second, we decided against collecting unit costs in four countries due to a combination of low sample size and anticipated difficulties in collecting relevant information. Where published unit costs were unavailable, we identified collaborators within countries to assist with the task using standardised protocols and templates (Chisholm, 2000). Although departure from such protocols carries the risk of producing non-comparable unit cost

estimations, it was not possible to adhere to the protocol in all countries due to study resource constraints, variations in the availability of information, and limitations to the level of commitment that we could reasonably expect from collaborators to carry out this onerous task. Where the service type exists, unit costs from Australia, Canada, Italy and the UK have proved relatively easy to collect. Progress for other countries is slower: see table 1.

### Future directions for multi-national economic evaluations

This descriptive study of treatment patterns for patients with schizophrenia/schizoaffective disorder has indicated that there are enormous variations between countries yet the inclusion criteria for the study aim to ensure similarity of needs and characteristics in the study population. Any multi-country cost-effectiveness evaluation needs to give special consideration to these varying contexts. Unfortunately, there is still little in the way of guidance on what techniques are appropriate for handling some of these issues. This is possibly because there is no right or wrong approach, but that different approaches carry varying degrees of advantages and limitations. Pang (2002) concludes that the principal value of multi-national studies is to demonstrate that findings are robust over a variety of settings or to identify cases for which this is not so. If maximising the generalisability of results is becoming an essential aspect of multi-national evaluations, understanding these issues is particularly important in the evaluation of mental health care. Our study shows that there a large number of services and agencies involved, giving rise to multiple sources of variation and leaving considerable room for error in analysis and interpretation.

### Acknowledgements

Martin Knapp and Jennifer Beecham devised the economic aspects of this study.

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**Table 1 Summary of unit cost data collection to date**

| Service                   | Czech Republic | Germany | Norway | Poland | South Africa | Spain | Sweden |
|---------------------------|----------------|---------|--------|--------|--------------|-------|--------|
| <b>Psychiatric</b>        |                |         |        |        |              |       |        |
| Inpatient day             |                |         |        |        |              |       |        |
| Outpatient visit          |                |         |        |        |              | n/a   |        |
| A&E visit                 | n/a            |         | n/a    |        |              | n/a   |        |
| Day hospital visit        |                |         |        |        |              | n/a   |        |
| Specialised accommodation |                |         |        |        |              |       |        |
| <b>Non-psychiatric</b>    |                |         |        |        |              |       |        |
| Inpatient day             |                |         |        |        |              |       |        |
| Outpatient visit          |                |         |        |        |              |       |        |
| A&E visit                 | n/a            |         |        |        |              |       |        |
| Day hospital visit        |                |         |        |        |              |       |        |
| Specialised accommodation |                |         |        |        |              |       |        |
| Sheltered employment      |                |         |        |        |              |       |        |
| <b>Community services</b> |                |         |        |        |              |       |        |
| Day care attendance       |                |         |        |        |              |       |        |
| CPN                       |                |         |        |        |              |       |        |
| Social worker             |                |         |        |        |              |       |        |
| GP                        |                |         |        |        |              |       |        |

*Shaded cells:* unit cost has been collected

*Blank cells:* waiting for information/exploring potential information sources

*n/a:* psychiatric/non-psychiatric distinction does not exist for either the service or the unit cost information

# Cost-effective strategies for reducing the global burden of mental ill-health: a generalised approach

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It is now recognised that a substantial proportion of overall disease burden is attributable to psychiatric disorders (WHO, 2001a). There is a wealth of research, predominantly from industrialised countries, into the efficacy and cost-effectiveness of a range of pharmacological and psychosocial treatments in specific disease populations. However, little is known about the proportion of population-level disease burden attributed to psychiatric disorders that is (or could be) averted by evidence-based interventions, and at what cost.

## The rationale for a generalised approach to cost-effectiveness analysis

The growing use of cost-effectiveness analysis (CEA) to evaluate the relative value of mental health care interventions has been dominated by prospective studies of new drug or psychological treatments compared with 'usual care', in which the additional costs of switching to the new intervention are compared with the additional health gain. However, this conventional form of incremental CEA ignores the question of whether currently used interventions are themselves cost-effective. It also has limited use to decision makers in settings other than the one in which a study is undertaken, as the starting points for analysis varies across settings.

The World Health Organisation (WHO) has embarked on a work programme — called *CHOosing Interventions that are Cost Effective* (WHO-CHOICE) — in which the primary aim is to generate estimates of the costs and effects of a wide range of health interventions for leading causes of and risks for disease burden ([www.who.int/evidence/cea](http://www.who.int/evidence/cea)). WHO-CHOICE employs a 'generalised' form of CEA in which the costs and effectiveness of new and existing interventions are compared to the starting point of 'do nothing'. The use of a common reference removes the constraint that the current intervention mix must be continued thus eliminating differences in starting points.

## Overview of WHO-CHOICE methodology

WHO-CHOICE has developed a set of methodological guidelines and analytical tools with which costs and effectiveness can be estimated (Baltussen et al., 2002). For establishing intervention effectiveness (adjusted for coverage and adherence) a population model is run for two scenarios: 1) a counterfactual situation representing the natural history of disease (no interventions in operation); and 2) the epidemiological situation reflecting the population-level impact of each intervention, each implemented for a period of ten years. The difference between these two simulations represents the population-level health gain (measured in disability adjusted life years, or DALYs, averted). Total population-level costs, using standardised templates and factor inputs for patient- and programme-level costs (Adam et al., 2003; Johns et al., 2003), are computed for the ten-year period and expressed in international dollars (I\$). Finally, costs and effects are subjected to a stochastic analysis of uncertainty, with results reported in terms of the probability of an intervention being cost-effective at a given level of resource availability.

## Generalised CEA: an application to mental health

Analyses of costs and effects have been carried out at the level of WHO regions, with each region split into two or three sub-regions according to rates of adult

and child mortality. The WHO sub-region EURO A (Western Europe, with a population of 411 million) is used here to illustrate the impact of interventions to reduce the burden of schizophrenia and depression.

### Estimation of intervention costs and effects

The population-level costs and effectiveness of a range of interventions were considered, based on recent reviews of the international literature, and are summarised in table 1.

| Table 1 Intervention effects for population modeling of schizophrenia and depression           |  |                |   |     |     |
|--|--|----------------|---|-----|-----|
| Intervention strategy / scenario   | Setting /target population                         | Main effect(s) | % improvement (compared to null) <sup>a</sup> |     |     |
| <i>Schizophrenia</i> (coverage: 80%)   |  |                |   |     |     |
| 1. Pharmacotherapy: neuroleptics   | Outpatient care (hospital-based & community-based) | Disability     |   | 18  |     |
| 2. Pharmacotherapy: atypicals  |  |                |   | 19  |     |
| 3. Pharmacotherapy + family therapy  |  |                |   | 25  |     |
| 4. Case management (including 3)   |  |                |   | 26  |     |
|  |  |                | (a)   | (b) | (c) |
| <i>Depression</i> (coverage: 50%)  |  |                |   |     |     |
| 1. Pharmacotherapy: TCAs   | Primary health care                                |                | 8.8   | 3.5 | 0   |
| 2. Pharmacotherapy: SSRIs  |  | a) Remission   | 9.2   | 4.0 | 0   |
| 3. Brief psychotherapy   |  | b) Disability  | 6.8   | 4.0 | 0   |
| 4. Pharmacotherapy + psychotherapy   |  | c) Recurrence  | 10.3  | 5.3 | 0   |
| 5. Proactive care (including maintenance)  |  |                | 14.8  | 6.4 | 9   |
| <i>Note:</i> a Population-level effect = efficacy * (coverage * adherence * partial response). |  |                |   |     |     |

*Note:* a Population-level effect = efficacy \* (coverage \* adherence \* partial response).

**Schizophrenia treatments** A number of key pharmacological, psychosocial and organisational strategies were assessed. Treatment effects were modelled in terms of change in disability, derived with reference to effect sizes reported in meta-analyses (for example, Mojtabai et al., 1998). Both a hospital- and a community-based outpatient service model were estimated. The lower overall costs of the latter model reflected increased use of day care and residential care and a reduced need for acute and long-stay hospital admissions.

**Depression treatments** For primary care based interventions provided on an episodic basis the main impact of treatment was measured as an increase in remission (see, for example, Solomon et al., 1997). Maintenance treatment for recurrent depression was incorporated into a proactive collaborative care strategy, for which a relative risk reduction in recurrence of 50% was estimated. Estimates of efficacy obtained from clinical trials were adjusted by intervention coverage (50%), adherence (45–55%) and partial response (25%).

### Population-level intervention cost-effectiveness

Baseline results are presented in figure 1, which gives total costs (discounted at 3%) and effects (discounted at 3% and age-weighted) for the single and combined intervention strategies for the two conditions. Since the public health impact as well as the cost of interventions varies substantially, values have been placed on a log scale. This has the additional advantage of being able to establish a range of broad cost-effectiveness isoquants (dotted lines), each of which represents one order-of-magnitude difference in cost per DALY averted (I\$ 1,000, I\$ 10,000 etc.).

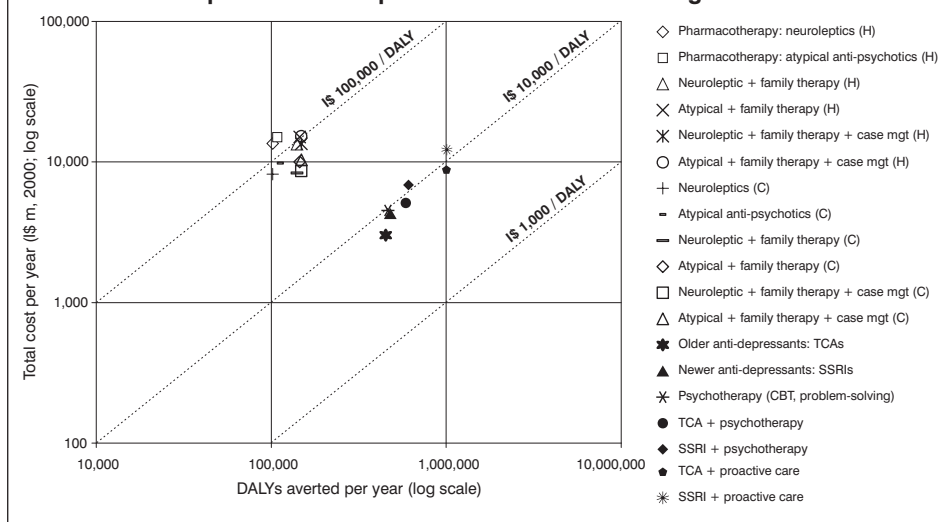
The average cost per DALY averted for schizophrenia is relatively high (over I\$ 50,000), reflecting the fact that only a modest proportion of the burden of schizophrenia is averted by these interventions (100,000–150,000 DALYs, equivalent to 23–33 disability-free days per case per year), and at a considerable cost (even non-intensive community-based interventions have a cost in excess of I\$ 5,000 per year). Depression interventions with the lowest cost per DALY

#### Box 1

**Resource costs per depressive episode** include drug dosage, psychotherapy (6–8 sessions), case management (4–6 contacts), primary care (3–6 visits), psychiatric outpatient care (33–66% of cases, 4–6 visits) and inpatient stays (5–15% of moderate-severe cases, 1–2 weeks). The programme-level costs of training primary care providers were also captured.



**Figure 1 Average cost per DALY of interventions to reduce the burden of schizophrenia and depression — EURO A sub-region**



averted include episodic treatment with older anti-depressants and proactive care with older anti-depressants (incremental cost-effectiveness ratio below IS 10,000). Proactive collaborative care strategies have the greatest potential impact on population health (one million DALYs averted per year, equivalent to 24

disability-free days per six month treated episode), resulting from the significant proportion of recurrent episodes avoided by maintenance treatment.

### Conclusion: generalised CEA for mental health policy and practice

Generalised CEA has been developed as a means by which decision makers may assess and improve the performance of health systems, with data on avertable burden now being generated under the WHO-CHOICE work programme for a wide range of diseases and risk factors. The inclusion of interventions for reducing the burden of mental ill-health within this exercise provides an important opportunity to put these under-recognised health problems 'on the map', both from an efficiency and an equity point of view. Using the criteria of the Commission for Macroeconomics and Health (WHO, 2001b), results indicate that the most efficient interventions for reducing depression are very cost-effective (each DALY averted has an incremental cost of less than one year of average per capita income), and that the average cost-effectiveness ratio of all but the most expensive hospital-based interventions for schizophrenia meet the criterion for being good value, as each DALY averted costs less than three times GDP per capita.

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# Estimating the costs of additional training for primary health care workers

Michelle Slead\*

\* Adapted from an original paper by Angela Hallam and the European Early Promotion Project Group

## Introduction

This paper summarises some cost estimation work undertaken within a four-year study monitoring the implementation and effects of a programme of additional training for primary health care workers (PHCWs) that aimed to promote the psychological and social adaptation of children and families. The study took place in five European countries: the UK (where the PHCWs were health visitors), Cyprus, Finland, Greece and the Federal Republic of Yugoslavia (FRY). PHCWs received an intensive training programme intended to enable them to relate to families, to assess family need on the basis of factors known to influence child mental health, and to support those in need. The aim of the intervention was to facilitate early identification of those children at risk of psychological and social problems, and to prevent the onset of such problems. This short paper describes the cost implications of providing the PHCWs with the additional training and support needed to implement the intervention.

## Methodology

A template was designed to process data from each country and to calculate costs (see box 1). Information was taken from the progress reports given at team meetings. These reports usually supplied details of the numbers and professional background of trainers and trainees, the length of the course, and arrangements for providing ongoing supervision of the trainees. Contacts in each country were asked to confirm the details and to provide extra information about time spent on activities such as informal meetings and administration.

## Challenges

Arrangements for the provision of ongoing supervision varied from country to country. In some cases arrangements changed over time so costs reflect instances where sessions became less frequent as the PHCWs required less support. To maintain consistency, arrangements for ongoing supervision and support have been assumed to continue for the same length of time in each of the countries as in the UK (two years and four months).

All PHCWs who were trained were assumed to have continued in employment and received ongoing supervision, although at the Finland site, one person left after a year. This would make little difference to overall costs. In Greece,

### Box 1 Data collected

- A. Time spent on formal and informal course-related activities by staff, including trainers, trainees and any support staff.
- B. The working conditions of all staff; number of working days/hours per annum, salary details, employer contributions to national insurance schemes and pensions etc, and overhead costs of office space, stationery, etc.
- C. Time spent by staff (section A) multiplied by the unit cost calculated at section B to reach the total cost of the staff inputs for the training course.
- D. Running costs for the course, such as handouts and refreshments.
- E. Capital costs of the course, such as rent and equipment.
- F. Costs summary, presenting total costs and costs per trainee for the course and for continuing supervision arrangements.

however, two course participants did not complete the training course. These courses were designed for 12 people, but the resources were used to support only ten. Costs were calculated using both sets of assumptions.

When estimating the unit costs of staff time in the UK, it was possible to include overhead costs, such as the cost of office space, heat, light, equipment and stationery, as these data are publicly available (see, for example, Netten and Curtis, 2000). For the other countries, no realistic estimates could be made for these items. These differences in the scope of cost estimations means that the UK data are not directly comparable. Of course, even if these data were available direct comparisons would need to be made with caution, given the influence on costs of the social, economic, political, historical and cultural structures peculiar to each country.

### The costs of training

With due regard to the cautionary notes above, local costs were converted to pounds sterling using 'purchasing power parities' (PPPs). This would give an idea of the comparative costs of running the training course in each country. PPPs are the rates of currency conversion that eliminate the difference in price level between countries (OECD, 1996). Thus, when the conversion is made using PPPs, it reflects only the differences in the volume of goods and services purchased (Chisholm, 2000).

| <b>Table 1 Training course costs</b>          |        |        |         |        |
|---|--------|--------|---------|--------|
|   | London | Cyprus | Finland | Greece |
| Number of trainees                            | 9      | 13     | 16      | 10     |
| <i>Total cost (UK£ PPP; 1999–2000 prices)</i> |        |        |         |        |
| Course only                                   | 17,367 | 18,290 | 10,231  | 5,590  |
| Course plus continuing support                | 43,656 | 40,526 | 26,952  | 11,310 |
| <i>Cost per trainee</i>                       |        |        |         |        |
| Course only                                   | 1,930  | 1,407  | 639     | 559    |
| Course plus continuing support                | 4,851  | 3,117  | 1,685   | 1,131  |

In table 1, the total costs of running the course and providing continuing supervision in four countries are presented in £sterling PPPs. No PPP rate was available for the FRY.

Although the same training model was used in each country, the costs associated with the course varied a good deal. Importantly, the number of staff hours absorbed by course activities were different in each country: 1,980 hours in the UK;

2,417 hours in Cyprus; 1,519 hours in Greece; and 2,773 hours in Finland. An hourly cost per trainee was estimated, which is perhaps the most useful way of comparing data across countries: £22 in the UK; £17 in Cyprus; £10 in Finland; and £7 in Greece.

### Summary

Despite several challenges, it was possible to estimate the cost of providing the additional training to PHCWs in each country. Not only does this provide valuable information for anyone planning to run such a course in future, but these data will also be used to establish the relative cost-effectiveness of the intervention. These analyses are underway for the UK data (Hallam et al., 2003) and will be completed for the other countries by 2004.

### Acknowledgements

This costs estimation work was undertaken as part of a wider project funded by numerous bodies, including the Gatsby Charitable Foundation and the EU Leonardo da Vinci programme. The coordinators of each centre are Professor Hilton Davies (UK), Dr Anna Paradisiotou (Cyprus), Dr Kaija Puura (Finland), Professor John Tsiantis (Greece) and Professor Veronika Ispanovic-Radojkovich (Federal Republic of Yugoslavia).

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### Current projects in International Mental Health

#### The Mental Health Economics European Network (MHEEN)

This EC-funded network is led by the LSE and NGO Mental Health Europe with partners in the 15 EU countries plus Iceland and Norway. It aims to improve understanding and dissemination of mental health economic information to support decision and policy making and enable cross-national comparative analysis of mental health care systems through extensive data gathering of primary economic dimensions relevant to mental health systems. This will lead to a network for learning about economic issues in mental health and how they are being addressed in EU Member States and beyond.

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#### Post-traumatic Stress in the Balkans — the STOP Project

This is an EC-funded project, led by Professor Stefan Priebe from Queen Mary's College, focuses on posttraumatic stress among people from Bosnia, Croatia and Serbia. The objectives are (i) to understand why most people suffering from post-traumatic stress do not seek treatment, (ii) to establish the extent to which research results gained in populations who took refuge outside the war area apply to those who stayed in the Balkans, (iii) to benchmark what outcomes are to be expected for patients in specialised centres, (iv) to identify treatments that are associated with better outcomes, and (v) to establish how the costs of individual care packages are linked to outcome. Results are expected in 2006.

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#### Economic evaluations of mental health interventions in developing countries

Economic evaluations are needed to help decision-makers identify cost-effective models of mental health care in developing countries. A systematic search of bibliographic databases and reference lists in published papers identified micro-economic evaluations for developing countries. From more than 300 abstracts, 59 were selected; most are from sub-Saharan Africa, Latin America and South Asia. Cost-effectiveness analyses were most common but the majority of studies focused on community-based management rather than prevention, diagnosis or treatment. When assessed against a standard checklist, the quality of the studies was found to be poor. The base for decision-making is therefore weak and the argument for more evaluative studies is strong.

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# Cognitive impairment in older people: future demand for services and costs

Adelina Comas-Herrera, Raphael Wittenberg, Linda Pickard, Martin Knapp and MRC CFAS\*

\* <http://www.mrc-cfas.cam.ac.uk/cfas>

The MRC CFAS study is supported by major awards from the Medical Research Council and the Department of Health. We would like to acknowledge the essential contribution of Family Health Authorities, local general practitioners, interviewers and interviewees for their participation in the study.

## Introduction

This study, funded by the Alzheimer's Research Trust, aimed to make projections, for the next 30 years, of future numbers of older people with cognitive impairment, their demand for long-term care services and the future costs of their care under a range of specified assumptions.

## Methodology

A macrosimulation (or cell-based) model was developed in order to investigate the impact of cognitive impairment among older people on future long-term care demand and expenditure, and to explore systematically key factors that are likely to affect future long-term care costs of cognitive impairment.

The model developed builds on an earlier long-term care projections model constructed at PSSRU and described in Wittenberg et al. (1998; 2001). The earlier model included all dependent older people and did not distinguish between those with cognitive impairment and those with other types of dependency. The new model concentrates on cognitive impairment using a range of data, including, in particular, data from the Medical Research Council's Cognitive Function and Ageing Study (MRC CFAS). A full description of the model is available in Comas-Herrera et al. (2003).

## Base case projections

The model produces projections under a set of assumptions about some of the key factors that will impact on future long-term care expenditure. This base case should be treated as a starting point for examination of the assumptions used in the model, not as a prediction of the future. The base case assumptions are summarised in the box below.

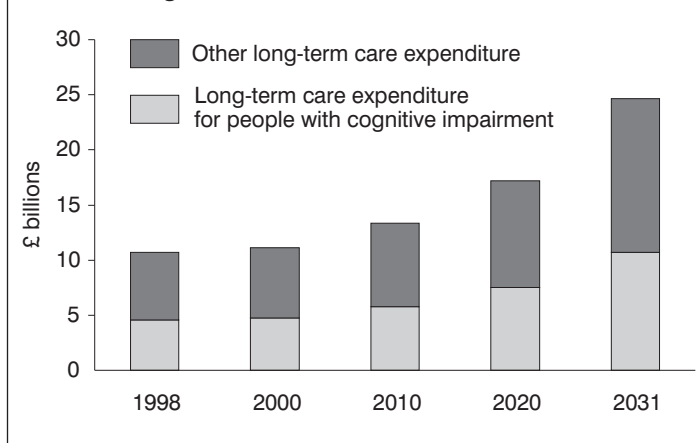
The model projects that between 1998 and 2031 the numbers of older people with cognitive impairment in England will rise by 66%, from 461,000 to 765,000. The numbers of people with cognitive impairment in institutions would rise by 63%, from 224,000 in 1998 to 365,000 in 2031, to keep pace with demographic pressures.

Expenditure on long-term care services for older people with cognitive impairment in England is projected to rise from around £4.6 billion in 1998 to

### Box 1 Main base case assumptions

- Government Actuary's Department (GAD) 2000-based population projections.
- Unchanged prevalence rates of cognitive impairment, by age and gender.
- Marital status changes in line with GAD 1996-based projections
- Unchanged service receipt patterns by age, dependency, household type and other needs-related circumstances.
- Social care unit costs rise by 1% per year and health care costs by 1.5% in real terms.
- Gross Domestic Product (GDP) grows by 2.25% per year.

**Figure 1 Base case projected long-term care expenditure for older people with cognitive impairment, England**



around £10.9 billion in 2031 (in 2000/1 prices, that is with expected real increases but not nominal changes in care costs), as shown in figure 1. This amounts to a rise from around 0.61% of Gross Domestic Product (GDP) to around 0.70% of GDP in 2031, assuming real GDP grows by 2.25% per year.

These figures do not comprise the total costs of cognitive impairment to society. That would require the inclusion of the costs of a wider range of services to a wider range of public agencies and service users and the opportunity costs of informal care.

### Factors affecting long-term care expenditure for people with cognitive impairment

Sensitivity analysis carried out using the model produced some important results (see Comas-Herrera et al., 2003, for details). It showed that projected future demand for long-term care services for older people with cognitive impairment is sensitive to assumptions about future numbers of older people and about future prevalence rates of cognitive impairment and functional dependency. Projected future expenditure on long term-care for older people with cognitive impairment is also sensitive to assumptions about future rises in the real unit costs of services, such as the cost of an hour's home care.

The model was also used to explore changes in the assumptions about informal care and patterns of formal care. Scenarios were explored in which decreases in the availability of informal care resulted in increased use of formal services. Scenarios in which residential care substitutes for informal care would involve significant extra expenditure

### Conclusions

The results of the analyses show that, unless more effective treatments for cognitive impairment are developed and made widely available, the numbers of older people with cognitive impairment will rise significantly over the next 30 years. This means that substantial increases in formal services will be required. The implication is that there is a need to develop, and make widely available, better treatments to slow down the progressive decline associated with dementia.

It should be stressed that the model *does not make forecasts about the future*. It makes projections on the basis of specific assumptions about future trends. The approach involves simulating the impact on demand of specified changes in demand drivers, such as demographic pressures, changes in household composition, or specified changes in patterns of care, such as more support for informal carers. It does not involve forecasting future policies or patterns of care.



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### Unit Costs of Health and Social Care 2002

Edited by Ann Netten and Lesley Curtis and published by the PSSRU

The tenth annual Unit Costs report is the largest (at 201 pages) and, we believe, the most accurate yet. The aim of the series is to improve unit cost estimates over time, drawing on material as it becomes available, including ongoing and specially commissioned research. It brings together information from a variety of sources to estimate national unit costs for a wide range of health and social care services.

The report consists of sets of 'schemata' or tables, which as well as providing the most detailed and comprehensive information possible, also quote sources and assumptions so users can adapt the information for their own purposes. Also included are: an editorial discussing current and new developments; brief articles providing background to user services, descriptions of cost methodology or use of cost estimates; price indices; a reference list of key studies; a glossary; and indexes.

#### New in this edition

In this volume a new section on services for disabled people includes rehabilitation and independent living services as well as high dependency residential services. A new schema is included for nurse-led rehabilitation wards. Other new costs information covers the patient costs of visiting GPs, and social services child care drawing on the Children in Need data collection.

There are five brief articles: a description of a study which is examining the cost implications of a nurse practitioner service for care home residents; details of service levels and costs of inpatient care as a source of support for young people with psychiatric disorders and their families; information about a new annual return on personal social services expenditure and unit costs; information about a new source of data on mental health services in England; and an article on the development of Health Accounts, a way of organising health information to permit improved analyses of the efficiency and effectiveness of health services, and enable international comparisons.

#### Online and in print

The 2002 edition is available in full at the PSSRU website — [www.pssru.ac.uk](http://www.pssru.ac.uk) — as an Acrobat file. Printed copies are available from the librarian at the PSSRU in Canterbury ([PSSRU\\_library@ukc.ac.uk](mailto:PSSRU_library@ukc.ac.uk)), price £21. Unit Costs volumes for previous years to 1995 (with articles on different aspects of costing research and methodology) are still available, and are priced at £12 for the 2001 volume and £1 each for previous years (when ordered with the 2002 volume). All prices include post and packing.

# **The costs of supporting people with dementia in nursing homes**

Catherine Henderson

In this article we summarise the research evidence on care costs and dementia, from an extensive literature review undertaken for Janssen Pharmaceuticals. We identified 20 papers covering aspects of the relationship between care costs *within* nursing homes and severity of dementia, including three reviews (Wimo et al., 1997; Ernst and Hay, 1997; Jonsson et al., 2000).

There is little information on cost patterns once people have entered institutional care. Wolstenholme et al. (2002) note that the high proportion of fixed costs in nursing homes makes it hard to estimate the additional costs of dementia. However, '... resource use, measured by staff time expended, is an excellent proxy for costs, as it represents the largest component of cost that is tied to the characteristics of resident' (Mehr and Fries, 1995). Resource Utilisation Groups, for example, are based on the statistical relationship between severity and wage-weighted staff time (Ljunggren and Morris, 1998).

Where additional costs are estimated, mostly in the US, estimates vary considerably from slight to more than one-third higher (Ernst and Hay, 1997; Jonsson et al., 2000). O'Brien and Caro (2001) found that on average a person with dementia requires 197 more care hours per year than someone without dementia, increasing for residents with more severe cognitive impairment. Wimo et al. (1997) observe that there is some controversy about how much extra cost is associated with dementia. They cite research that finds the cost of care for demented nursing home residents to be 36% higher than non-demented residents. Kavanagh and Knapp (1999) found that the costs of placements of those with 'cognitive disability' in UK voluntary sector communal establishments (nursing and residential homes) rose with severity of the disability.

The relationship between cognitive impairment, functional impairment and behavioural problems is complex but Aronson, Post, and Guastadisegni (1993) found cognitive impairment to be a better predictor of care needs than functional status. By contrast, one UK study found that although physical disability was statistically associated with higher nursing home prices, cognitive impairment was not a significant additional factor (Netten et al., 2001). They found little evidence that prices varied within the type of home to reflect levels of cognitive impairment.

Special Care Units (SCUs) in nursing homes in the US and Canada are designed to accommodate the needs of people with dementia (Phillips et al., 1997; Chappell and Reid, 2000). Facilities with SCUs have higher staff costs but there is no cost difference between the SCU and other units within the same home when casemix is taken into account (Mehr and Fries, 1995). Holmes and Teresi (1998) found higher personal care inputs in SCUs than in traditional care units and subsequently found that more aide time in SCUs was associated with a reduction in behavioural disorder over time (Holmes et al., 2000).

More information is needed on individual level costs of nursing home care. Information from the UK on the staff time given to individual residents with dementia would be particularly welcome. Attention must also be paid to the relationship between cognitive impairment, functional impairment, behavioural problems and resource use (see also Fries et al., 1993). Each of these factors will have an important role to play in developing better economic models of disease progression in dementia (Wolstenholme et al., 2002).

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### Media influences on mental health policy

Hallam, A.J. (2002) Media influences on mental health policy: long-term effects of the Clunis and Silcock cases, *International Review of Psychiatry*, 14, 1, 26–33.

Community care policies for people with mental illness came under intense scrutiny during the 1990s, following a series of homicides and incidents of violence, suicide and neglect. This paper reports a small, independent research project that explored the press coverage of two such incidents and traced its effect on policy decisions.

Most of the relevant articles appeared in the broadsheet papers, with little interest shown by the 'popular' tabloid press. The Clunis and Silcock cases were associated with well-informed campaigners wanting improvements to care. Emotive, headline-catching language was used to highlight the risks people with schizophrenia may pose to themselves and others.

Such publicity contributed to an unbalanced policy debate. Policy measures introduced in response to public concerns about risk and dangerousness have served to impose additional constraints on people with mental health problems. In addition, responsibility (and blame when systems fail) has increasingly been devolved to individual service professionals, which in turn is likely to have long-term implications for recruitment, retention and morale in health and social care professions.

## **PSSRU research on care homes for older people**

Robin Darton, Andrew Bebbington, Ann Netten and Jacquetta Williams

The PSSRU has undertaken a series of large-scale surveys of care homes over the last 20 years. Some findings from a longitudinal survey of older people admitted as permanent residents with local authority financial support during the autumn of 1995 (Bebbington et al., 2001) and a cross-sectional survey of older residents and care homes conducted in the autumn of 1996 (Netten et al., 2001a) were presented in the 1998 issue of the *Review* (Darton, 1998).

Following these surveys, commissioned by the Department of Health, a study of self-funded older residents admitted to care homes in 1999/2000 was conducted for the Department for Work and Pensions (Netten et al., 2002). Current work is focusing on the causes, processes and consequences of care home closures, and variations in the social climate of care homes.

Findings relating to cognitive impairment are discussed by Netten et al. (2001b). Residents with severe cognitive impairment and those with frequent problem behaviours were more likely to occupy nursing places, although these factors were not associated with the type of placement in a multivariate analysis of predictors of admission. Cognitive impairment among self-funded residents was significantly lower than among publicly-funded admissions. However, among those with similar levels of physical ability, self-funded people with severe cognitive impairment were more likely to be in residential places than publicly-funded residents, suggesting that self-funders tend to take the lower-cost option. There was little evidence that prices within types of home varied according to levels of cognitive impairment, and cognitive impairment was not associated with survival except for the most severely cognitively impaired on admission. However, decisions about changing placement policies for publicly-funded residents with cognitive impairment need to take account of the quality of care received in different types of care home and outcomes for residents.

These studies were undertaken before the introduction of NHS-funded nursing care for self-funded residents in October 2001. It will be of interest to examine whether this will have any effect on the choices of homes made by residents and their families.

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## **Policy organisation and practice of specialist old age psychiatry in England**

This was a cross sectional survey of consultants in old age psychiatry designed to describe and compare service arrangements according to three broad domains: (i) levels of professional autonomy (ii) degree of community orientation (delivery of and linked with community services) and (iii) degree of integration between health and social care provision. The work was funded by the NHS Executive North West as part of the portfolio of research within the North West Dementia Centre, a collaboration between the University of Manchester and the University of Liverpool. Contact: D.J.Challis@man.ac.uk

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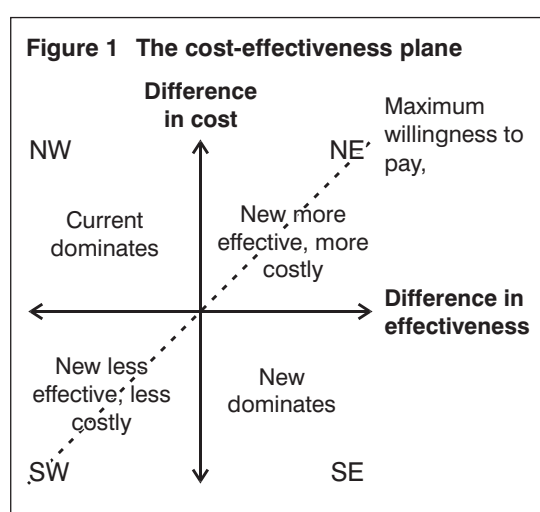
# Acceptable mental health care? A new decision-making tool for cost-effectiveness analysis

Barbara Barrett and Sarah Byford

## Introduction

Scarce resources in health care systems mean choices must often be made between new and existing treatments. When a new intervention is found to be both more effective and more costly than the existing treatment, the choice between the two options is not straightforward and must involve a judgement concerning the maximum willingness to pay for an improvement in health status. This paper explores the role of cost-effectiveness acceptability curves in this decision-making process.

## The cost-effectiveness plane



When comparing a new with an existing intervention, four possible eventualities arise, which are depicted on the cost-effectiveness plane in figure 1. One treatment can dominate another — in the SE quadrant the new treatment dominates the current treatment and in the NW quadrant the opposite is the case. Frequently, however, one treatment is both more effective and more costly — this is the case for the new treatment in the NE quadrant and for the existing treatment in the SW quadrant. In such situations, the decision to switch to the new treatment depends on the value placed on the associated change in effectiveness. This chosen value, or maximum willingness to pay, is depicted by lambda ( $\lambda$ ) on the cost-effectiveness plane. On any point to the left of  $\lambda$  the current treatment is considered more cost-effective and should be chosen, whilst on points to the right of  $\lambda$  the new treatment is preferred.

## Incremental cost-effectiveness ratio

Economic results are often summarised in terms of incremental cost-effectiveness ratios (ICER) — the ratio of the difference in costs (cost of new minus cost of existing treatment) divided by the difference in effects (effect of new minus effect of existing treatment). Resources can then be directed towards those interventions that achieve a lower ICER than a society's maximum willingness to pay for such an improvement in effectiveness, within the constraints of existing budgets.

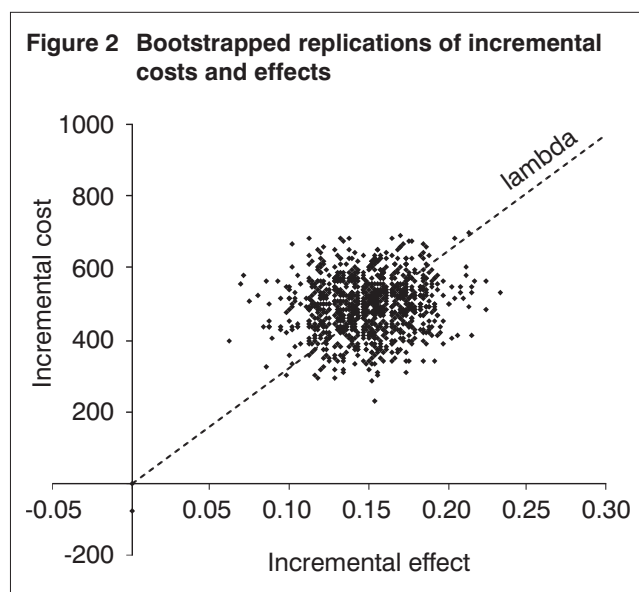
The use of ICERs, however, has been limited by a lack of understanding on the part of decision-makers (Hoffman and von der Schulenburg, 2000) and statistical problems with the use of ratios, in particular problems of representing statistical uncertainty (Briggs and Fenn, 1998; Briggs and Gray, 1999; Stinnett and Mullahy, 1998). These statistical problems have led to the development of various methods of representing the uncertainty surrounding ICERs, including confidence boxes, confidence ellipses, Taylor series expansion, Fieller's theorem and non-parametric bootstrapping (Briggs and Gray, 2000). In all of these methods, however, problems of statistical interpretation and clarity in presentation persist.



## Cost-effectiveness acceptability curves

Attention has recently turned to the incremental net benefit (INB) approach and the use of cost-effectiveness acceptability (CEAcc) curves (Van Hout et al., 1994; Glick et al., 2001). CEAcc curves are a graphical representation of the probability that a particular intervention is cost-effective, over a range of possible values for the maximum willingness to pay for a unit improvement in health outcomes, (Fenwick et al., 2001).

To illustrate, the cost-effectiveness plane in figure 2 displays hypothetical bootstrapped replications\* of the incremental cost and incremental effectiveness results of a clinical trial. The data points are concentrated in the NE quadrant,

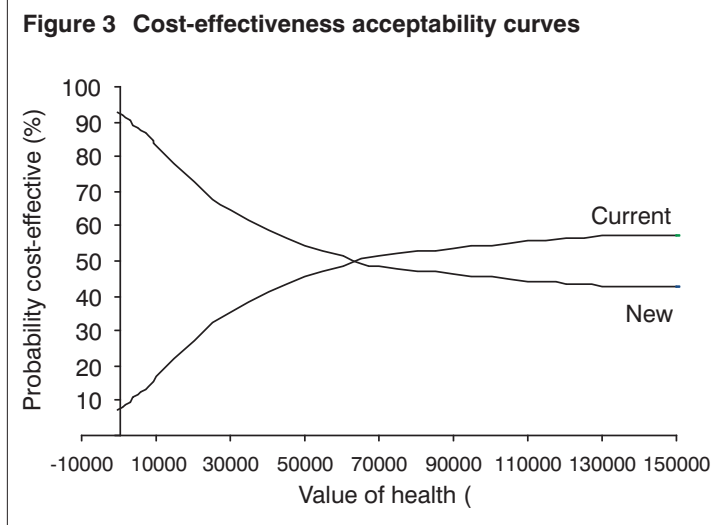


where the new intervention is more effective yet more costly than existing treatment. If  $\lambda$  represents the maximum willingness to pay, the area to the right of the line is the acceptability surface where the increase in cost of the new intervention is acceptable given the gain in effectiveness achieved. To the left of  $\lambda$ , the new intervention is rejected as the gain in effects is not considered worth the increase in cost.

\* Bootstrapping is a statistical procedure based on repeatedly sampling from the observed data generated in an evaluation (Efron and Tibshirani, 1993). Bootstrapping is advocated because it does not rely on parametric assumptions of the distributions of costs and effects, such as normality (Barber and Thompson, 2000). This is of particular importance when dealing with cost data, which are often highly skewed.

However, given that the value of  $\lambda$  is unknown, the probability that the new intervention is relatively more cost-effective than existing practice is presented for a range of levels of willingness to pay. Thus a CEAcc curve is created by varying the value of  $\lambda$  from zero to infinity. In effect, this involves the rotation of  $\lambda$  from the horizontal position, where the new intervention dominates (see figure 1), to the vertical position where the existing treatment dominates. The resultant curve, shown in figure 3, represents the proportion of the data that lie on the acceptable side of  $\lambda$  for every given value of  $\lambda$ .

CEAcc curves therefore move away from the traditional reliance on arbitrary decision rules regarding statistical significance, which are being increasingly criticised as irrelevant in a decision-making context (Claxton, 1999). The decision to adopt one intervention over another is based on the expected cost-effectiveness of the intervention, or the probability of making the correct decision, irrespective of the statistical significance of the differences in costs and outcomes.





## Conclusion

Whilst avoiding many of the statistical problems associated with ratios, CEAcc curves are able to quantify graphically the probability that an intervention is cost-effective compared to an alternative intervention in a manner that can be made clear to decision-makers. Lucid presentation of results can aid well-informed decision-making and thus CEAcc curves represent an important advance in reporting economic analyses.

Despite the plethora of methodological research attesting to the usefulness of CEAcc curves and recent attempts to increase their use in decision-making (Pedram Sendi and Briggs, 2001), few economic evaluations have employed this methodology (Fenwick et al., 2001). There have been no published studies where CEAcc curves have been generated in the mental health field, although we know of two that are currently in press (Byford et al., 2003; Scott et al., 2003). With increased familiarity and understanding, however, this decision-making framework is likely to become more common.

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### PSSRU Bulletin 14

The 2003 edition of the PSSRU Bulletin is available from June 2003 at the PSSRU website, [www.pssru.ac.uk](http://www.pssru.ac.uk).

There are two-page articles on all the Unit's main research programmes and a comprehensive brief listing of current projects and recent publications as well as a round up of developments at the PSSRU.

# Cost-conscious clinical guidelines — the example of the schizophrenia guideline

Judit Simon

This paper summarises the role of health economics in the recently published schizophrenia guideline (NICE, 2002) and reviews the current challenges of incorporating health economic evidence into mental health guidelines.

## Cost-conscious clinical guidelines

Clinical practice guidelines are, by definition, 'systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances' (Rizzo and Sindelar, 1996). To make clinical practice decisions in the face of scarce resources, decision makers need to consider both clinical and health economic evidence (Donaldson et al., 2002). By doing so, health benefits generated by National Health Service (NHS) and Personal Social Service (PSS) resources can be maximised.

Increasing health care costs, rapid development in health care technology and fixed national health care budgets mean that cost-conscious guidelines are increasingly important. Methods for developing guidelines have steadily improved by adopting the gold standard of systematically reviewing, synthesising and grading the relevant clinical evidence. However, unlike other areas of guideline development, there is little practical or theoretical experience to direct the incorporation of health economic considerations within clinical guidelines (Mason et al., 1999). The clinical practice guideline programme of the National Institute for Clinical Excellence (NICE) in the UK combines resource use considerations with clinical effectiveness evidence by active involvement of health economists in the multidisciplinary guideline development process.

## Health economic evidence in the schizophrenia guideline

A major characteristic of the NICE mental health guidelines is their enormous scope, attempting to cover all aspects of the management of a particular disease area. Under such circumstances, performing a systematic review of the health economic evidence is more feasible and makes better use of scarce research resources than performing further economic studies (Jefferson and Demicheli, 1996). For the schizophrenia guideline, all pharmacological and psychological interventions and the different service provision options for the treatment of schizophrenia were systematically reviewed from both clinical and economic perspectives.

The health economic literature review (see box 1) contributed evidence on cost and cost-effectiveness to the Guideline Development Group's statement and recommendation formulation process and provided information about the economic burden of schizophrenia. The results have been published in the full version of the guideline (NICE, 2003).

## Common challenges in mental health guideline development

The schizophrenia guideline aimed to develop recommendations about both newer technologies (for example, day hospital care or atypical antipsychotic medication) and also well-established interventions such as family therapy or cognitive behaviour therapy.

### Box 1 Resources searched and search criteria for the literature review

#### Databases searched

- MEDLINE, EMBASE, PsycINFO, CINAHL
- Cochrane Database of Systematic Reviews
- Database of Abstracts of Review of Effectiveness
- Cochrane Controlled Trials Register
- NHS R&D Health Technology Assessment programme
- Specialist health economic databases
- OHE Health Economic Evaluations Database
- NHS Economic Evaluation Database

#### Search restrictions

- no language restrictions
- only studies published after 1985 included unless a pre-1985 study included the clinical literature review and contained economic evidence

Since health economic research mostly focuses on new technologies and the research methods develop rapidly, low quantity and poor quality of existing economic evidence is common.

In clinical guidelines, randomised controlled trials provide a best estimate of clinical efficacy. Economic studies however, are usually based on non-randomised evidence, which may provide little clinical evidence but rich data on the identification and measurement of key resource use items. There is currently no guidance on how to handle this conflict in study quality when devising clinical guidelines. Furthermore, mental health economic evaluations conducted alongside clinical trials rarely have sufficient statistical power to detect significant resource use or cost differences with confidence (Briggs, 2000).

There has been a tendency by NICE to use quantity- and quality-of-life analyses for informed decision making (NICE, 2001), mainly because they can be compared across many different programmes. It is often difficult to measure the life-lengthening effect of mental health interventions. Moreover, many mental health disorders are chronic, with a high impact on patients' and carers' quality of life. However, there is as yet no consensus on whose judgement should be taken into consideration when measuring the benefit of a therapeutic intervention as changes in quality of life. Effectiveness is traditionally assessed by disease-specific outcomes (for example, binge frequency, or scores on the Hamilton Rating Scale for Depression) that provide the continuous, end-point variables commonly used in economic evaluations. These challenges, and the absence of cost-per-QALY (Quality Adjusted Life Year) information for many interventions, mean that cost-utility analysis is unlikely to be the most appropriate basis for making informed choices.

### Concluding remarks

Early involvement of a health economist in the development of clinical guidelines and a systematic framework for the incorporation of health economic evidence would greatly improve the standard and value of cost-conscious clinical guidelines. Various economic evaluation methods should be explored in the secondary analysis of economic evidence and further research is necessary on the question of evidence synthesis across study designs. Nevertheless, health economics has much to contribute to identifying and refining the subject area for guideline development and implementation.

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# Sample size calculation for economic evaluation

Gerhart Knerer

## Introduction

Evidence suggests that evaluations powered to detect differences in clinical outcomes may be under-powered to detect large differences in cost (Gray et al., 1997). The evaluation of new interventions, however, should be adequately powered to address economic questions, even if over-powered with respect to clinical outcomes. Indeed, commentators have suggested that under-powered studies are unethical (Briggs, 2000).

In recent years, there has been a proliferation of papers concerned with methods for sample size calculation in economic evaluations (see, for example, Briggs and Gray, 1998; Laska et al., 1999; Willan and O'Brien, 1999). The newer methods call for calculations to be based on both costs and effects and, generally, require more information than methods for calculating sample sizes for effect or cost differences alone. This paper explores one such method in order to highlight some of the issues involved.

## Sample size methodology

Willan (2001) has described a method based on the net benefit concept (Stinnett and Mullahy, 1998, provide a detailed explanation of net benefits). The formula to derive sample sizes for estimating incremental net benefit is reproduced below. Beginning with an explanation of notation:

- $Z$  in the equation  $(Z_{1-\alpha} + Z_{1-\beta})^2$  refers to the area under the normal curve distribution for one or two tailed significance tests ( $\alpha$ ) and power ( $1-\beta$ ). For a 2-sided test where  $\alpha=0.05$  and power ( $1-\beta$ )=0.90, the corresponding value for  $(Z_{1-\alpha} + Z_{1-\beta})^2$  is equal to 10.507 (Machin et al., 1997).
- $\text{Var}(e)$ ,  $\text{Var}(c)$ , and  $\text{Cov}(e, c)$  denote, respectively, the variance of effect, variance of cost and covariance between effects and costs observed for patients receiving new treatment (T) and standard treatment (S). Variance measures the spread or variability in the data. Covariance measures the degree of linear dependence between two variables.
- $\lambda$  represents society's willingness-to-pay for a unit gain in effectiveness.
- $\Delta$  is defined as the smallest clinically important difference.

$$n = \frac{(Z_{1-\alpha} + Z_{1-\beta})^2 (X_T - X_S)}{2}$$

where:

$$X = \text{Var}(e) + \frac{\text{Var}(c)}{2} + \frac{2\text{Cov}(e, c)}{2}$$

## Example

A hypothetical example is outlined for an evaluation seeking to compare two treatments for mild and moderate depression in general practice — generic anti-depressants plus supportive GP care or placebo plus supportive GP care. Supportive care is defined as the establishment of a positive relationship with the patient and may include referral to practice-based counsellors or psychology services. The hypothesis is that treatment with generic anti-depressants plus supportive care is more cost-effective than supportive care alone for people with

mild and moderate depression, defined as a score of 10 to 29 on the Beck Depression Inventory (BDI) (Beck et al., 1988).

**Variance-Covariance** In order to populate the above formula, estimates of the variance of costs and effects must be identified from previous trials or unpublished sources (for example, NICE submissions). This assumes that variance estimates derived from one trial are applicable to another, given similarity of treatments. An in-depth search revealed only one suitable study (Bower et al., 2000). In this randomised controlled trial, cost and effect differences were compared across three treatments — usual GP care, cognitive behavioural therapy (CBT) and non-directive counselling (NDC). For the purpose of the current example, we assume that NDC or CBT plus

antidepressants is equivalent to our experimental treatment whilst NDC or CBT without antidepressants is equivalent to our control treatment. The BDI and societal costs were collected over a 12-month follow-up. Trial estimates of variance and covariance are summarised in table 1.

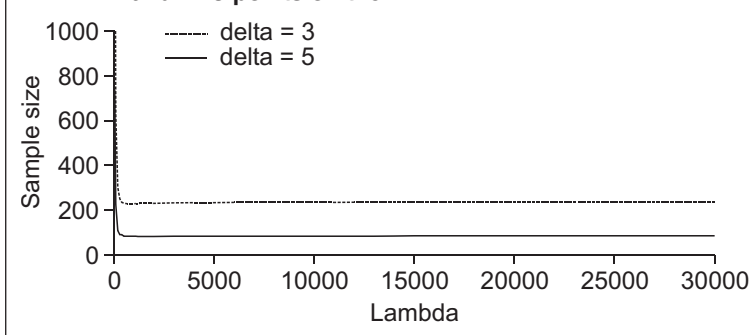
|  | Estimates of |           |           |
|--|--------------|-----------|-----------|
|  | Var(e)       | Var(c)    | Cov(e, c) |
| Supportive care alone (n=198)                | 74.27        | 1,207,742 | 1041.21   |
| Anti-depressants plus supportive care (n=56) | 127.57       | 3,214,594 | 4433.97   |

**Delta** ( ) Careful thought must be given to the value of delta — the smallest clinically important difference. Discussions with clinicians suggest that a difference of 3–5 points on the BDI can be viewed as clinically important. Therefore, the differences in BDI scores used in the current study are 3 and 5 points.

It should be noted that there is a preference for a more ‘universal’ delta, rather than one specific to the treatments being compared. In other words, there is a preference for generic, rather than disease specific, measures of patient preferences (Willan, 2001). Although the EQ-5D measure of health-related quality of life was included in the original study (Bower et al., 2000), it is doubtful in the current context whether this would provide superior estimates to those derived using BDI scores. As Bennett points out, general health status and mobility instruments are of ‘limited usefulness for describing depression’ (Bennett et al., 2000).

**Lambda** ( ) Some uncertainty surrounds the appropriate value to assign to society’s willingness-to-pay for a unit gain in effectiveness — lambda. Rather than just apply the commonly cited value of £30,000 (Timmins, 2001), the approach taken here is to explore the uncertainty surrounding this figure by varying the value of lambda.

**Figure 1 Sample sizes for a range of lambda values for  $\Delta=3$  and  $\Delta=5$  points on the BDI**



## Results

Populating the above equation, approximately 235 patients per arm are required to give 90% power to detect an incremental net benefit equivalent to a 3-point difference in BDI scores at  $\alpha=0.05$  and  $\lambda=£30,000$ . To detect an incremental net benefit equivalent to a 5-point difference, 85 patients per arm are needed. These figures are stable for values of lambda in the range £500–£30,000 (figure 1).



## Conclusions

More strenuous attempts should be made to ensure that adequate power becomes the rule rather than the exception in economic evaluations. Although sample size calculations for cost-effectiveness require more information than calculations for costs or effectiveness alone, this example shows that such calculations are feasible, given adequate prior information on costs and effects.

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### Economic evaluation of treatments for eating disorders

CEMH researchers are involved in three evaluations of treatments for eating disorders, each of which employs a randomised controlled design to assess costs, effectiveness and patient acceptability.

One multi-centre trial compares specialist inpatient treatment, specialist outpatient treatment and general management in Child and Adolescent Mental Health Services for adolescent anorexia nervosa. The work is undertaken in collaboration with the Departments of Child and Adolescent Psychiatry at the Universities of Liverpool and Manchester.

Contact: Sarah Byford

There are also two multi-centre studies funded by the PPP Medical Healthcare Trust with lead collaborators at the Institute of Psychiatry. The first of these compares the effectiveness and cost-effectiveness of cognitive guided self-care versus family therapy for adolescents with bulimia nervosa. The second will explore brief multiple family day treatment, inpatient care and outpatient family therapy for anorexia nervosa.

Contact: Jennifer Beecham

## **MSc students' dissertation summaries**

Each year a number of students linked to PSSRU or CEMH submit dissertations on mental health economics and policy issues. Brief descriptions of MSc projects 2001–2002 are given below.

***Mental Illness and the Workforce in the UK*** Norwich Union Healthcare provides income protection for people with long-term illnesses, including mental health problems. Return to work is beneficial for both the policyholder and the insurance company. For people with an indication of stress, depression, and/or anxiety, motivation to return to work was associated with social support, the level of benefits received, assistance in finding alternative work and treatment quality.

*Nadia Jemai, MSc International Health Policy at LSE*

***Cost-effectiveness of fish oil (ethyl-EPA) in the treatment of bipolar disorder*** Bipolar disorder carries a high risk of suicide so treatment to avert relapse is crucial. This evaluation assessed the cost-effectiveness of ethyl-EPA, in a 12-week double-blind RCT. Comparing economic costs and clinical measures, patients using fish oil did slightly better than the placebo group. The fish oil group showed statistically significant reduction in symptoms on two out of three outcome scales.

*Francis Swaray, on placement at CEMH from City University*

***The cost of diabetes in patients with schizophrenia*** The newer atypical antipsychotic medications help reduce costs of schizophrenia by reducing the rate of extra-pyramidal symptoms (EPS) but can cause costly side-effects such as diabetes. This study found that for UK residents with schizophrenia the mean total annual cost of care for diabetic patients did not differ significantly from patients without diabetes. However, higher median costs for the diabetic group suggest diabetes onset related to newer antipsychotic agents may increase total health care costs for schizophrenia patients.

*D. Clay Ackerly, MSc International Health Policy at the LSE*

***Mirror-image economic evaluation of typical v. atypical anti-psychotics in the treatment of schizophrenia*** This study assessed whether the high acquisition cost of the newer atypical antipsychotics are offset by reduced services utilisation. Two groups were studied. The 'typical-typical' group started on conventional drugs and remained on them. The 'typical-atypical' group began on conventional drugs and then switched over to the newer drugs. The mean total cost for the typical-atypical group before switching was higher than for the typical-typical group. After switching, both figures decreased but there were significant reductions for the typical-typical group.

*Ibrahim S. Kanu, on placement at CEMH from City University*

### ***How can observational clinical drug studies contribute to evidence-based decision-making?***

Evidence-based decision-making relies on access to relevant, high quality information, but there is a shortage of RCT-based findings. Examination of two schizophrenia drugs studies in England and Wales suggests that observational studies can provide useful evidence, providing they are both appropriate for the question being asked and of good quality.

*Karin Cerri, MSc International Health Policy at the LSE*

***An analysis of mental health care resources in 12 developing countries*** Mental health problems cause specific difficulties in developing countries because of their reinforcing relationship with poverty. There is growing evidence of the burden mental health problems place on developing economies, but little evidence of the resources available to respond to this burden. This project analysed the financial resources of 12 developing countries. Common resource problems were identified: insufficient financial and human resources were obstacles, while the differing systems of financing affect both provider and user behaviour.

*Claire Curran, MSc Health, Population and Society at the LSE*

***An economic analysis of a pilot RCT comparing injectable methadone with oral methadone for opiate dependent injecting drug users*** The economic objectives were to develop data collection procedures, to assess the reliability of patient self-report and the reliability and accuracy of researchers' and clinic staffs' recording. An exploratory investigation of costs and benefits was undertaken to generate hypotheses for future research. The results will be available later in 2003.

*David Epstein, on placement at CEMH from York University*

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The PSSRU was established in 1974 at the University of Kent at Canterbury. Two further branches opened in 1996 — at the LSE and at the University of Manchester — with the aim of further strengthening the Unit's work on equity and efficiency in social care, and organisation, financing and funding issues. PSSRU research is funded by the Department of Health, other government departments, research councils, charitable trusts and international social welfare organisations.

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The Centre for the Economics of Mental Health was established at the Institute of Psychiatry in 1993. Today its research and other activities are supported by the Institute of Psychiatry, the Medical Research Council, the Department of Health, the European Commission and a number of other funders. The Centre promotes, conducts and disseminates health economics research on a range of mental health issues. Particular topics of interest include children and adolescents with mental health problems, people with schizophrenia or depression, people with dementia and adults and children with intellectual disabilities.

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For enquiries about the PSSRU, contact Judy Lee (University of Kent) on 01227 827672 or Angie Mehta (LSE) on 020 7955 6238.

### Book in preparation

#### Mental health policy and practice in Europe

Edited by Martin Knapp, David McDaid, Elias Mossialos and Graham Thornicroft

This book, to be published in 2004, will provide a comprehensive synthesis and critical analysis of the state of European mental health policy and practice. It will reflect on the current state of service provision and discuss the differing historical contexts that influenced the development of services and service delivery.

Topics include the development of the asylum system in the late nineteenth and early twentieth centuries, the gradual inclusion of mental health care within welfare state and social insurance based systems, the impact of psychotropic medications on community-based therapies, and the alternative mental health care service models in pre-accession and transition countries in central and eastern Europe.

The volume is part of the European Observatory on Health Care Systems series.

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