

## Mental Health Research Review 6 May 1999 Acrobat version

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Edited by Daniel Chisholm and Stephen Almond

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## Director's introduction

Martin Knapp

There is today, as there has always been, an important 'economic agenda' running through mental health policy. This agenda has both macro and micro aspects: that is, questions are raised both about the operation of the whole mental health care system and about the efficiency and equity of specific care and treatment arrangements within it.

This is also the agenda for the PSSRU's Mental Health Economics and Policy Programme, at the LSE and the University of Kent, and for the work of the Centre for the Economics of Mental Health, at the Institute of Psychiatry.

Since the PSSRU first started to conduct research on mental health care (and care for people with learning disabilities) in the mid 1980s, and particularly since the formal establishment of a programme in 1991, our research activities have drawn from across this agenda and have been heavily influenced by the developing policy and practice contexts in England. When CEMH was established in 1993 in London, we had the further opportunity to examine both macro and micro issues in relation to both policy and practice. A very busy work schedule in the intervening six years has contained a great many macro and micro studies.

Much of the research conducted within PSSRU and CEMH has been genuinely inter-disciplinary, as will be clear from this and previous issues of the *Mental Health Research Review*. Of course, running strongly through most of the work has been the use of economic concepts, methods and techniques. This bias towards economics has not been because we believe this

particular disciplinary perspective to be inherently superior to others. Nor in fact is it simply because many members of the two groups are economists. The primary reason has been that economic questions are frequently being posed but only rarely being answered. There are still surprisingly few researchers interested in addressing the various economic questions raised by numerous and pressing practice and policy developments in the mental health sphere.

A core objective of the programmes at PSSRU and CEMH has been to disseminate the findings of our research widely and in accessible forms. Pages 41-42 of this *Review* give brief details of many articles, books and book chapters published since last year's issue.

The *Mental Health Research Review* itself is also an important dissemination vehicle (as the complete contents list for previous five annual issues, which appears on the inside back cover, suggests). This sixth issue — expertly edited by Daniel Chisholm and Stephen Almond — describes much of the recent and current mental health research by PSSRU and CEMH.

There is only space for *summary* accounts of *some* of our work, so please contact us if you would like to know more.

## Editors' introduction

Daniel Chisholm and Stephen Almond

The merit of a health economics study in terms of coverage and generalisability is determined to a significant extent by three parameters (see table 1):

- As in clinical evaluation, an important consideration for the review, assessment and interpretation of economic evidence is research *study design*. For example, is the economic study part of a prospective, controlled trial, a retrospective study with no control group, or based on secondary data sources?
- A further feature relates to the *type of economic evaluation*, which is focused on the way in which outcomes are measured and compared with costs.
- A final characteristic is the *scope or perspective* of the study, which is concerned with the extent to which the costs and consequences of an intervention across all relevant parties have been assessed.

Viewed as an inter-connected hierarchy, the most robust form of evidence upon which to base decisions on cost-effectiveness and resource allocation is one conducted prospectively with two (or more) appropriately-sized, randomly-allocated groups of patients, for whom all conceivable costs and outcomes are measured in a common currency. Owing to the difficulty in quantifying all outcomes in monetary terms, most studies to date have in fact been cost-effectiveness or cost-consequences analyses, based on a range of clinical measures and often employing the cost perspective of the formal service sectors only. For example, the two research studies described by Daniel Chisholm and colleagues in this year's edition of the *Mental Health Research Review* are instances where an observational design has been

employed to assess changes in (a wide range of) costs and outcomes over a brief follow-up period. By contrast, Judy Clegg and Juliet Henderson provide early results of a longitudinal cohort study of boys with developmental language disorders in which lifetime costs across the domains of education, accommodation, health and employment are estimated. Other examples of ongoing or recently completed cost-outcome studies, using a range of study designs and perspectives, are also summarised.

Cost studies carried out in isolation from collection of data on user outcomes can also contribute significantly to our understanding of the economic impact of a disorder or to the improved planning of services: Jennifer Beecham provides an up-to-date picture of the providers and users of day activity settings for people with mental health problems, together with an analysis of components of support and their associated costs.

Where prospectively collected data are unavailable, resource utilisation, cost and outcome data can be obtained from secondary sources in order to simulate the expected effects of a new mental health care intervention or strategy. Stephen Almond tackles a number of unresolved issues in simulation modelling of schizophrenia, whilst Paul McCrone, Daniel Chisholm and Carla Croft, describe an attempt to place costs on a range of alternative service models.

Most removed from primary research, but no less informative, are meta-analyses and systematic or expert reviews. Martin Knapp provides a review of the cost-effectiveness evidence relating to schizophrenia that has been generated by CEMH, PSSRU and other research teams.

**Table 1 Parameters determining the coverage of health economics studies**

<b>Parameter 1</b>	<b>Parameter 2</b>	<b>Parameter 3</b>
<b><i>Study design</i></b> (What ratings are based on)	<b><i>Costing scope/perspective</i></b> (What costs are included)	<b><i>Type of economic evaluation</i></b> (How costs and outcomes are combined)
<i>Non-empirical</i> (e.g. administrative database)	<i>Single care agency</i> (e.g. health service only)	<i>Cost-minimisation analysis (CMA)</i> (outcomes are the same)
<i>Observational</i> (e.g. cross-sectional study)	<i>All formal care agencies</i> (e.g. voluntary sector included)	<i>Cost-effectiveness analysis (CEA)</i> and <i>cost-consequences analysis</i> (e.g. cost per change in depression)
<i>Quasi-experimental</i> (e.g. retrospective study)	<i>Formal &amp; informal care agencies</i> (e.g. lost employment included)	<i>Cost-utility analysis (CUA)</i> (e.g. quality adjusted life year)
<i>Experimental</i> (e.g. RCT)	<i>All societal costs</i> (e.g. user/carer distress included)	<i>Cost-benefit analysis (CBA)</i> (all costs and outcomes monetised)

# **Schizophrenia: improving cost-effectiveness**

Martin Knapp

## **Introduction: the high costs of schizophrenia**

The direct health and social care costs for supporting people with schizophrenia in England in 1992/93 amounted to £810 million, and the overall cost of illness was approximately £2.6 billion, even without including caregiver costs (Knapp, 1997). These high costs are recurrent: schizophrenia is an early-onset, chronic, incurable illness which can severely damage the quality of life of sufferers and families. It also raises societal concerns, for example about personal and public safety.

It is not surprising, therefore, that a lot of policy and practice attention has been given to the support and treatment of people with schizophrenia. There are, for example, concerns about the heavy demands on in-patient services: more than 5% of NHS expenditure on in-patient beds was accounted for by schizophrenia patients in 1992/93, and while this proportion will have fallen over recent years, it remains the case that this low-prevalence illness is a major reason for hospitalisation.

Other concerns have been voiced about the organisation of effective community care, about public safety and about the inappropriateness of currently available care regimes for some patient groups (particularly black and ethnic minority groups). Much interest has been expressed in the atypical antipsychotic drugs recently launched onto world markets, and in using psychosocial treatments such as cognitive behavioural therapy.

Evidence has been accumulating for a few years on the economic impact of a number of different care arrangements and treatment modalities for people with schizophrenia. PSSRU and CEMH studies in this field are making contributions to this growing evidence base. The purpose of this paper is to summarise findings from PSSRU and CEMH studies and outline the aims of some studies which have recently begun. A substantial review chapter has also recently been completed (Knapp, Almond and Percudani, 1999).

## **The UK policy context**

A good starting point for understanding the UK policy context — which influences the orientation of much of our work — is the 1990 National Health Service and Community Care Act. The Act had a number of well-known intentions and consequences. Four particular features of the Act have especial pertinence for mental health. The first was to move away from decision-making dominated by the availability of services to a system which sought to tailor service responses to the individual needs and preferences of users and their families. A second key element was the development of a more mixed economy of care, rather than health and social care systems being dominated by the public sector. Third, there was some rebalancing of the relative responsibilities of the NHS and local authority social services departments. Fourth, there was considerable emphasis on community-based care as an alternative to institutional provision, continuing what was in fact a long-term trend in the UK.

Subsequent to the 1990 Act a number of specific initiatives were launched, particularly the Care Programme Approach introduced in 1991, the Mental Illness Specific Grant to channel money to social services departments, the promotion of supervision registers and the introduction of supervised discharge arrangements. These were all built onto the basic architecture of the 1990 Act,

and have exerted greater or lesser influences on local mental health care arrangements subsequently.

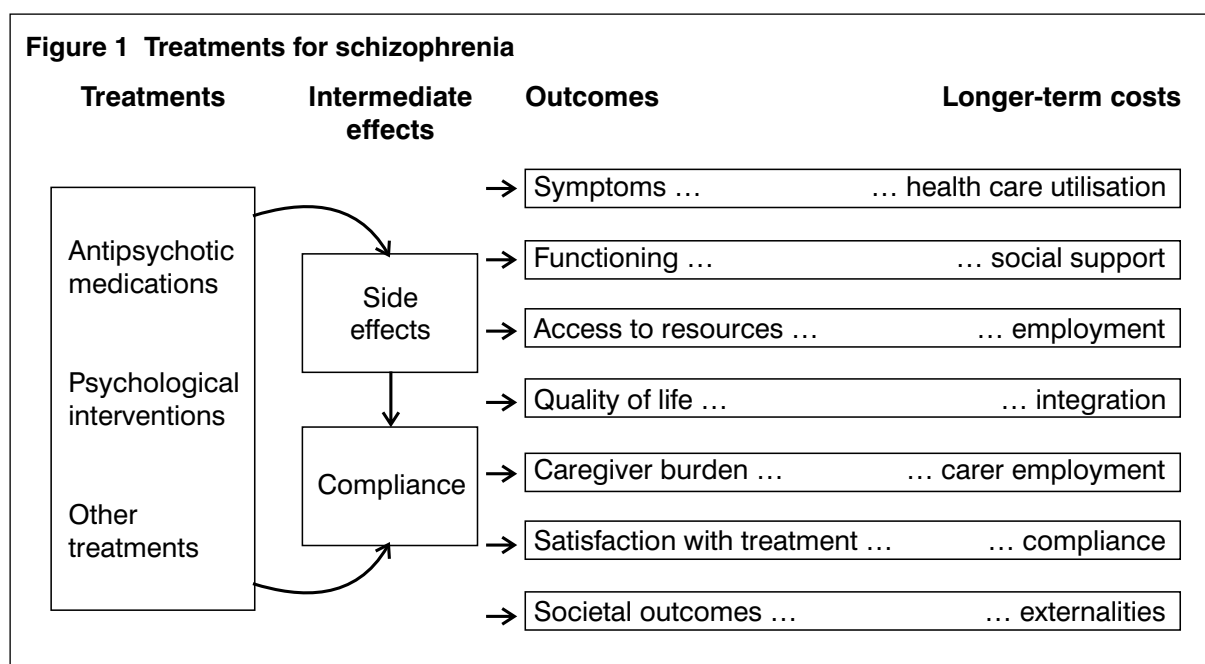
Since its election in 1997, the Labour Government has clearly given health policy some priority. In many respects the policy emphases are not so very different from those of the Conservatives, despite the obvious desire of ministers to distance themselves from what has been achieved — or not — over recent years. For example, there continues to be considerable reliance placed on community-based options for people with mental health problems, although the new Government has been quick to stress that these must be ‘safe, sound and supportive’. It has been more explicit in promising additional resources to allow the development of 24-hour nurse-staffed hostels, assertive outreach teams and a number of other service components. There is greater emphasis on the (evidence-based) promotion of quality and user outcomes. Precise details of the new policy are eagerly awaited.

### Improving cost-effectiveness?

Given the high costs of schizophrenia, there is understandable pressure to contain expenditure whilst nevertheless improving outcomes. In other words, cost-effectiveness improvements are being sought. Some particular policy/practice themes have been examined in PSSRU/CEMH research, each looking at ways of improving cost-effectiveness:

- medication compliance
- drug treatments
- community reprovision from long-stay hospital
- community diversion (including assertive outreach)

Figure 1 gives a schematic representation of a set of hypotheses which evaluative research on the treatment of schizophrenia should be addressing. It makes the links between treatment or care arrangements on the left-hand side, through two very important intermediate effects (side-effects and compliance), and so on to the outcomes which might be attained. Success in achieving some of these outcomes should have longer-run effects on the costs of the care system and the costs to other stakeholders (including people with schizophrenia themselves and their families).



**Compliance therapy** One particular concern in schizophrenia treatment is the high rate of relapse: many people with schizophrenia experience repeated acute episodes of the illness. There are good personal, clinical and economic reasons for wanting to prevent relapse or lessen its impact. The economic concerns are arguably the least important but certainly not irrelevant.

A meta analysis of trial-based evidence by Weiden and Olfson (1995) concluded that the costs of in-patient hospitalisation for first-episode cases amounted to about \$2.3 billion annually in the USA. Relapses over the subsequent two years cost in the region of \$2 billion. They estimated that roughly two-thirds of the costs of schizophrenia relapse could be attributed to loss of medication efficacy and one-third to medication non-compliance. Not surprisingly, therefore, care professionals have tried to improve users' agreement with and adherence to their treatment programmes.

Roisin Kemp, Anthony David and colleagues at the Maudsley Hospital have developed and evaluated a short counselling intervention, which they call *compliance therapy*, which targets this particular problem. People awaiting discharge from in-patient care are invited to discuss first their attitude towards their illness, and subsequently the drawbacks and advantages of drug treatment. A randomised controlled trial found that people with psychoses counselled in this way were five times more likely than a control group receiving non-directional counselling to take their medication without prompting. Over an 18-month follow-up period they had better global functioning, insight, compliance and attitudes to their medication (Kemp, Kirov, Everitt and David, 1998).

The economic component of this trial, carried out by CEMH, found that costs were no more than with standard counselling (Healey et al., 1998). The economic analysis covered all health and social care services, education, social security and housing supports, and criminal justice contacts, but excluded caregiver and lost employment costs. The evaluation found costs to be the same for compliance therapy as for standard counselling during each of the three six-month follow-up phases and over the full 18 months. Costs were higher for patients with greater symptomatology. Significant correlations were found between greater compliance and higher costs over the first six months. That is, improving compliance will initially *increase* costs, although over time there is an offsetting reduction. 'Compliance therapy' appears to be an efficient intervention.

**Drug treatments** A psychopharmacological revolution in schizophrenia is underway, although at different rates in different countries. The so-called atypical (novel) antipsychotics are being heralded as drugs which may be able to improve the impact on symptoms over conventional medications, although there is inevitably dispute over just how marked these effects might be. There is less dispute that the atypical drugs have fewer adverse side-effects. Conventional antipsychotics are disliked by many patients because of their side-effect profiles.

The growing body of economic evidence on the atypicals has not yet been subjected to formal systematic review. Much of it is very recent. What the evidence appears to suggest, however, is that the atypical antipsychotics have the ability to reduce the need for in-patient hospitalisation, and also to reduce the demands on other service providers in the community. The new drugs look like cost-effective alternatives to the conventional antipsychotics, and in conjunction with psychosocial therapies may eventually prove to be very effective. Evidence for this comparative cost-effectiveness comes from a number of sources, including simulations (decision modelling), retrospective analyses of 'naturalistic' databases, and prospective trials.

The PSSRU/CEMH group is actively participating in studies of each of these kinds of analysis. There are three prospective, randomised controlled trials, two

of them evaluating the outcomes and effects of treatment with one particular atypical drug and the other looking at all atypicals as a class. The general randomised trial, called CULASS, is a multi-centre (UK), multi-disciplinary study funded under the NHS Health Technology Assessment programme. It is led by Professor Shôn Lewis (Manchester) and involves researchers from Manchester, York, Nottingham, Imperial College London and the Institute of Psychiatry.

A number of simulation studies have been conducted by Stephen Almond (PSSRU). One of these is a five-year, Markov process model of transitions between health states (over three-monthly cycles) comparing olanzapine and haloperidol (Almond and O'Donnell, 1998). Key clinical pathways included positive and negative symptoms, relapse, dropping out and switching therapy. The study found similar costs for the projected paths of the two drugs.

**Community reprovizion** A long-running theme of research at PSSRU has been the impact of moving long-stay hospital residents to live in the community. Internationally, probably the most comprehensive and longest running evaluation of community-based care for former long-stay in-patients has looked at the closure of Friern and Claybury hospitals in North London. The former residents of these two hospitals were studied for five years after their discharge from hospital. Evidence was collected on their quality of life, health status, accommodation, service use patterns and costs.

The project was led by Julian Leff (Institute of Psychiatry). His team found that former in-patients were enjoying a quality of life at least as good as in hospital (Leff, 1997). There were no problems with higher-than-normal mortality, homelessness or crime. Accommodation stability in the community was good, and care environments were rated as better than hospital. Social networks were stable — a minority gained in this respect, but most were not socially integrated into local communities. Hospital readmissions were quite common (38% of the sample had at least one readmission over a five-year period). Psychiatric symptoms and social behaviour were very stable over time. Importantly, users clearly preferred community living to hospital.

The associated economic evaluation was carried out by Jennifer Beecham, Angela Hallam and Martin Knapp. We found that many services were used in the community, provided by a range of health, social care and other agencies. The one-year results are described by Beecham et al. (1997). Patterns of service use had changed somewhat over the five-year follow-up period. However, when summed together, the costs of these services were no different from the costs of the long-stay hospital care which people left. Consequently, the weight of the cost and outcome findings suggested that community care was more cost-effective than hospital care. Higher cost community care packages appear to be associated with better individual outcomes.

A supplementary investigation used the data after one year in the community to see if there were outcome, quality of care or cost differences between community provision in the public sector (separating NHS from local authority provision), voluntary (non-profit) sector and private (for-profit) sector. There were also a number of NHS-voluntary consortia accommodating former hospital residents. We found some significant cost and quality of care differences between the provider sectors, and a few outcome differences. Generally, care appeared to be more cost-effective in the public than in the private sectors (Knapp, Hallam, Beecham and Baines, 1999s).

**Community diversion (assertive outreach)** Much professional and policy attention has focused on the assertive community treatment (ACT) or outreach model developed in Madison, Wisconsin. There are, of course, many different

arrangements now in place to coordinate community care for people with acute mental health problems, but the different variants of ACT have generated special interest because of their apparent abilities to improve outcomes while containing or reducing costs (Weisbrod, Stein and Test, 1980; Essock, Frisman and Kontos, 1998).

The Daily Living Programme (DLP) was a UK adaptation of the Madison model, offering intensive home-based care for seriously mentally ill people facing crisis admission to the Maudsley Hospital. The DLP was set up and evaluated by Isaac Marks and colleagues, with the associated cost-effectiveness analysis (actually a 'cost-consequences analysis' in current terminology) being carried out by PSSRU/CEMH.

A randomised controlled study examined the cost-effectiveness of the DLP compared to standard in/out-patient hospital care over 20 months, followed by a randomised controlled withdrawal of half the DLP patients into standard care. Three patient groups were therefore compared over 45 months, depending on the support they received: DLP throughout the period, DLP for 20 months followed by standard care, and standard care throughout. The economic evaluation found the DLP to be more cost-effective than standard care over months 1-20, and also over the full 45 month period, but the difference between groups may have disappeared by the fourth year after initial randomisation (Knapp et al., 1998). The reduction of the cost-effectiveness advantage for home-based care was perhaps partly due to the attenuation of DLP care, particularly the loss of responsibility by the DLP team for in-patient admissions and discharges.

## Conclusions

Schizophrenia is a costly illness, not just for the NHS and other public sector bodies, but for sufferers, their families and the wider society. With the policy emphasis on community-based mental health care, purchasers, providers and politicians are urgently searching for more cost-effective modes of support and treatment.

The research community has responded with a small but rapidly growing number of economic evaluations of treatment modes and care approaches. Based on the accumulated evidence, including the PSSRU/CEMH research summarised here, it seems that cost-effectiveness improvements can be attained in areas of schizophrenia care. Three of these areas relate to the individual treatment of schizophrenia patients, through pharmacological or psychological methods. These treatments can not only be effective in terms of their impacts on symptoms and patient quality of life, but also cost-effective in making better use of scarce public sector and other resources.

There is also encouraging evidence in relation to community care for people either with chronic mental health problems or experiencing acute phases of their illness. Closing long-stay psychiatric hospital beds has been an occasionally controversial policy, but one that could pay dividends for the people affected and for public budgets. Closing *acute* beds, on the other hand, would presently be a mistake in some parts of the country, as the services and other supports needed by people with mental health problems are simply not in place. Nevertheless, the evidence on assertive outreach, for example in the form of the Daily Living Programme tried at the Maudsley Hospital, shows that models of care *can* be developed that are effective and cost-effective compared to standard (hospital-centered) arrangements.

Schizophrenia care remains a priority topic for PSSRU/CEMH evaluative research. Findings from our ongoing programme of studies will be available over



the coming months and years, and will be reported in future issues of this *Review* as well as through the usual dissemination channels.

### Key points

- Schizophrenia is a costly illness, not just for the NHS and other public sector bodies, but for sufferers, their families and the wider society.
- Treatments at the level of individuals can not only be effective in terms of their impacts on symptoms and patient quality of life, but also cost-effective in making better use of scarce public sector and other resources.
- In relation to community care, evidence on assertive outreach shows that models of care *can* be developed that are effective and cost-effective compared to standard (hospital-centred) arrangements.

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# Simulation modelling in schizophrenia: unresolved cost issues

Stephen Almond

## Introduction

It is now well established that long-term prospective clinical trials will provide the most comprehensive data for cost-effectiveness analysis of new drug interventions in schizophrenia, but to date few have been completed. In the absence of such data, simulation models have been used to calculate the *expected* costs of treating patients with schizophrenia for alternative drug therapies (Almond and O'Donnell, 1998; Palmer et al., 1998; Sacristán, Gómez, and Salvador-Carulla, 1997). This type of model offers a convenient starting point for evaluating costs but is usually subject to several limitations (Almond, 1998).

In this article, focus is placed on two significant cost aspects of simulation modelling that have generated important but largely unanswered questions from practitioners:

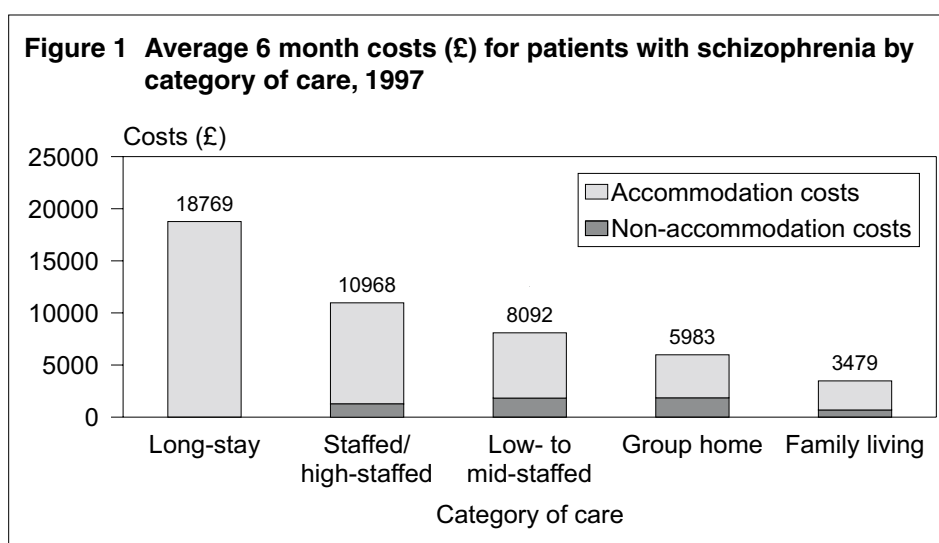
- Are changes in patient symptoms associated with real movements to different types of accommodation?
- To what extent do expected cost savings transform into actual cost savings?

The concept of opportunity costs is discussed and this leads on to a brief account of cost-shifting between different budgets. The final section briefly reviews the role of prospective clinical trials and the extent to which they can provide answers to these important modelling questions.

## Accommodation movements

Figure 1 summarises typical costs fed into UK models of schizophrenia. The significance of accommodation costs as a proportion of total average costs, and of total average costs between different types of accommodation, raises doubts for simulation model estimates. This is because changes in mental health symptoms as a result of drug therapy are hypothesised to be associated with changes in specific (assumed) packages of care made up of service and accommodation costs. If patients remain in their current residence, only changes in service utilisation can vary. If they move, service utilisation can vary but there may be some confounding associated with the type of accommodation and its staffing level.

Using the simulation approach, a patient can be transferred between different accommodation types as symptoms change, which in turn will be associated with a change in costs. But it would be both impractical and clinically ineffective for a patient continually to move residence according to their current



symptoms. In general, if a patient is not repeatedly relapsing they are more likely to be left in their current residence. *Does this mean that simulation models estimate unlikely changes in costs?*

This would be true if accommodation costs in a model are always adjusted to reflect changes in patient symptoms when in fact there is little or no movement between different types of accommodation.

However, because a model is a simplification of real world events, and in the absence of real data, one option is to ensure that differences in accommodation costs are set at a conservative level for different mental health symptoms. This will reduce any possible bias when evaluating the cost-effectiveness of alternative drug therapies. Another option would be to exclude movements in accommodation altogether, but this would go against the grain of the simulation approach — designed in principle to show possible new (long-term) events from new therapies. The best option is to use sensitivity analysis to test for zero changes in accommodation costs.

There is currently no published literature to show the extent of movement between different types of accommodation, or in general the extent to which patients can be moved to alternative accommodation, following improvements in symptoms by drug therapy. There is probably always more flexibility in the decision to send patients home, especially if there is available family support, than to transfer patients to another type of accommodation.

There is some unpublished evidence to suggest that patients do not really have the option to move freely between different types of accommodation, even in the event of significant changes in symptoms (Almond and Byrom, 1999). In a small-scale survey, psychiatrists were asked to hypothetically place patients in various types of accommodation conditional on experiencing positive and negative symptoms, first taking into consideration local supply conditions and then relaxing this constraint. The overall conclusion from this survey suggests that, for most combinations of positive and negative symptoms, psychiatrists were more likely to place patients at home but ideally would have liked to have placed them in various supported accommodations and, surprisingly, relatively more to long-stay in-patient care. However, the low sample size (n=11), the Delphi panel nature of the survey and the use of limited health outcome criteria, make it difficult to generalise these results.

***Is service utilisation ‘accommodation-driven’?*** Figure 1 also highlights an inverse relationship between accommodation and service utilisation costs. This is reflected by the fact that accommodation costs increase with staffing levels, and higher levels of support can reduce the need for certain key services, such as community psychiatric nurse, GP and social worker visits, etc.

As noted above, this leads to some confounding in simulation model estimates, related to whether changes in service utilisation are driven by changes in drug therapy or whether they are associated more with changes in the type of accommodation and staffing levels. If patients do not generally move between different types of accommodation, as suspected, this means that changes in service utilisation can be attributed (but not exclusively) to drug therapy with more confidence.

### **Expected and actual cost savings**

The debate over the comparison between savings in expected and *actual* costs relates to both services and accommodation. It is particularly important for the high potential savings in hospital costs associated with lower relapse rates from new atypical drug therapy in schizophrenia. Policy makers and practitioners question whether expected cost savings actually transform into real cost savings.

They argue that, in the short term, resource patterns do not change and costs are therefore unlikely to ‘disappear’ from the NHS system. For example, if an in-patient bed becomes available because of effective drug therapy, it is likely to be occupied, very quickly, by another patient. In fact, if the new patient is in an acute stage of schizophrenia, costs may even rise. This argument is real and it is difficult to defend simulation results from an accounting point of view.

However, economists argue that costs derived in a model should be viewed as *opportunity costs* and not pure accounting costs. This is because even if actual savings are not realised in a pure money sense, resources can be switched to their next best alternative use — suggested by the practitioners’ argument to be the next patient. This is central to basic economic theory — the efficient allocation of scarce resources. And even if real cost savings are made, it is difficult to justify the concept of ‘savings’. This is because the best course of action could well be associated with an increase in the supply of a factor that is currently scarce, such as the availability of an in-patient bed. In the long run, of course, actual savings would be associated more with total NHS expenditure than with individual GP or hospital budgets.

**Cost-shifting** What is perhaps of more interest to practitioners with regards to actual cost savings is not the concept of opportunity costs but the debate over ‘who saves what’ — or the extent of ‘cost-shifting’.

Cost-shifting refers to a situation in which one budget-holder incurs greater costs in treating a patient but the benefit of savings goes directly to another budget-holder. For example, if GPs prescribe a more expensive atypical drug for schizophrenia and this leads to lower hospital costs from lower relapse rates, their budget comes under pressure but the hospital budget benefits. Unless budget formulae are adjusted or centralised, cost-shifting will remain a problem. In theory, simulation models can be tested for cost-shifts but as yet there is no published evidence.

### **Prospective clinical trials: do they provide answers?**

Prospective clinical trials record economic data alongside clinical outcomes. This unitary source of data therefore provides a direct relationship between changes in symptoms and service utilisation patterns, including whether the patient actually does transfer to alternative accommodation. And more important, this pattern of utilisation is recorded for each drug prescribed. These are the main benefits of this type of trial, and deal with most of the limitations in simulation modelling. Yet as far as actual or real cost savings are concerned (expected costs are not relevant for actual data), prospective clinical trials will still not provide this information, which from a policy perspective may be disappointing. This would definitely be the case if real cost savings were made in a future time period (for example, the closure of a ward or hospital). Also, to measure the opportunity costs in a clinical trial would be a complex and time-consuming process — and unlikely to be included in the methodology of future prospective trial protocols.

### **Conclusion**

Simulation models provide useful ‘starting point’ estimates of the average costs of schizophrenia for patients treated with new atypical drugs. However, there must be caution when incorporating assumed packages of care in these estimates because of possible bias in the final results. This is particularly true for one of the most important cost aspects of the model — changes in accommodation status. Expected cost savings cannot be interpreted as actual cost savings. Economists argue that opportunity costs are more important and intuitive than financial costs, but admit they are difficult to calculate and would be difficult to

incorporate in future prospective trials. The debate on cost savings is enhanced by concerns about cost-shifting processes.

### **Key points**

- Simulation models calculate the expected costs of schizophrenia in the absence of real data and differ from models concerned with actual costs.
- Accommodation costs dominate total average costs but there is some doubt as to their relevance in simulation modelling due to movement questions.
- Actual cost savings come under scrutiny but should be examined in terms of opportunity costs and the ability to increase the supply of services.
- Cost-shifting means that the original purchaser of treatment may not experience the benefits of savings.
- Prospective clinical trials will provide superior data but are unlikely to identify opportunity costs and the extent of 'cost-shifting'.

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### **Economic evaluation of treatment for elderly patients with depression: a comparison of sertraline, placebo and patients who discontinue therapy**

This economic evaluation is based on a prospective clinical trial that examined long-term maintenance treatment with sertraline as prophylaxis against relapse and recurrence of depressive symptoms for elderly patients. The trial consisted of four discrete phases. Phases I and II used open label sertraline for durations of 8 and 12 weeks respectively. Phases III and IV were double-blind placebo controlled for durations of 48 and 52 weeks respectively. Clinical outcomes were measured using the MADRS. A wide range of services was included in the economic analysis. The unique feature of this trial is the follow up of both clinical and economic outcomes for patients who discontinued therapy. Results from this evaluation are currently in the process of journal submission. Clinical and economic outcomes were compared for patients treated with sertraline and placebo and those who discontinued therapy. These comparisons were carried out for patients who started and completed phase III and then for patients who stayed in the trial until the end of phase IV.

For further information, please contact Stephen Almond.

# Costing different models of mental health service provision

Paul McCrone, Daniel Chisholm and Martin Bould

## Introduction

The national policy shift towards more community-based mental health services has led to increased efforts by health and local authorities to assess current levels of provision across a range of service areas, to examine the extent to which identified local needs are being met by these services and to consider the resource implications associated with required or planned changes in the future configuration of services.

This article describes one recent attempt to model the costs of a range of mental health care strategies in an outer-London health authority. The perceived value of this modelling approach to service costing was to supply insights into and estimates of broad directions of change, which could subsequently inform a wider discussion between local clinicians, planners and managers about future mental health services in the locality.

## Method

The approach taken to model the estimated cost implications of pursuing alternative mental health service strategies was intended to provide an explicit framework for discussing local options for change. A series of steps was followed:

### *Step 1: Identification of mentally ill sub-populations*

The various models related to the entire adult and elderly population of the health authority, within which we identified three key mentally ill sub-populations (to which prevalence rates were applied):

- adults with a serious mental illness (SMI), subsequently divided by CPA levels 1-3;
- adults with common mental disorders (CMD), distinguished according to the two main diagnoses of depression and anxiety; and
- elderly people with a mental illness (EMI), split into organic (dementia) and non-organic disorders (psychoses and affective disorders).

### *Step 2: Attachment of service utilisation profiles to each user group*

Services included: psychiatric in-patient and out-patient care; day care attendances; contacts with a GP, CPN and social worker; practical community support (home care, drop-in centres, etc.). Contacts that individuals have with CMHT workers are included under the specific type of professional. Other service components including residential care and rehabilitation services were excluded from this particular analysis, and were assumed to remain constant at currently planned values for each of the models. For each component and client group, the following data were estimated, drawing on a number of sources, including completed research surveys or studies for the various sub-groups (see table 1):

- the proportion of sub-groups who use each service component (%), and
- the average amount of use per year for those who do access these services (N);

### *Step 3: Costing of service utilisation profiles*

Unit costs associated with each service component were obtained from previously calculated local or national estimates (Netten and Dennett, 1997; Chisholm, Lowin and Knapp, 1997) and applied to the estimated profiles of service use. Annual costs of care were estimated for each user group and for the whole mentally ill population.

**Table 1 Estimated contact rates for an adult and elderly mentally ill population**

Sub-group	In-patient (days)		O/P psych. (visits)		Day care (visits)		GP (contacts)		CPN (contacts)		Soc. work (contacts)		Comm. care*	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N
<b>SMI</b>														
<input type="checkbox"/> CPA 1	15	30	75	4	30	100	60	6	50	12	10	6	10	50
<input type="checkbox"/> CPA 2	30	60	75	6	40	70	60	8	70	20	20	12	20	75
<input type="checkbox"/> CPA 3	30	90	80	12	50	80	60	10	60	25	30	25	30	100
<b>CMDs</b>														
<input type="checkbox"/> Depression	1	20	9	6	5	25	50	12	9	12	5	25	1	50
<input type="checkbox"/> Neuroses	0.3	10	5	6	0	0	60	12	5	12	0	0	0	0
<b>EMI</b>														
<input type="checkbox"/> Affective	3	30	20	6	20	50	50	12	5	6	10	50	20	100
<input type="checkbox"/> Psychoses	1	50	20	6	20	100	50	6	50	12	10	50	20	100
<input type="checkbox"/> Dementia	15	100	2	6	30	50	50	12	5	12	10	25	40	100

\* Practical community support (incl. domiciliary support, drop-in centres etc.)

#### **Step 4: Costing different models of mental health service provision**

The estimation of costs for a baseline model (representing the *status quo*) was followed by the introduction of the following additional or substitute service models, in order to observe the effect of predicted changes to patterns of service delivery on existing costs of provision:

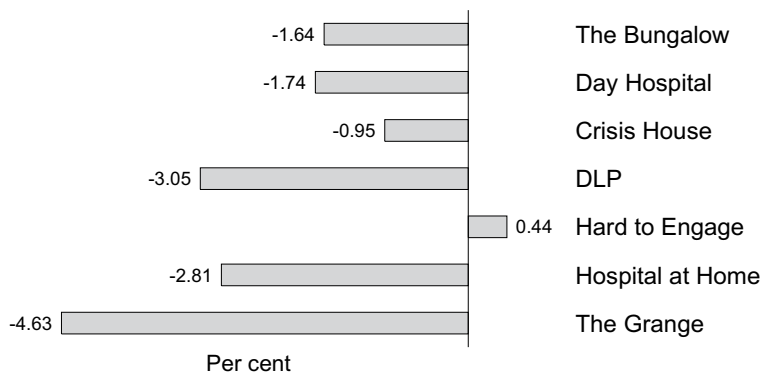
- alternatives to existing in-patient hospital provision (The Bungalow (Hodgson and Lewis, 1997); Day Hospital (Creed et al., 1997));
- crisis care and assertive outreach models (Crisis House (Beck et al., 1997)); Daily Living Programme (Knapp et al., 1994); Intensive case management for 'hard to engage' patients (Holloway and Carson, 1998); Hospital at home (elderly) (Williams, Ellis and Hardwick, 1997));
- comprehensive community-based mental health care models (Partial hospitalisation — The Grange (Scott, McCluskey and Smith, 1995)).

#### **Results**

Subsequent to the application of prevalence rates and unit costs, the estimated service cost associated with the set of service packages given in table 1 were calculated to be £9.43 million per 100,000 population aged over 15 years (1996/97 prices). The single largest component of cost is care for dementia (over £4 million p.a., at an average cost per user of £3072). The most resource-intensive group, as expected, is the SMI group, with mean costs per user rising from £2114 for CPA Level 1, through £4525 for CPA Level 2 to £6999 for the small number of CPA Level 3 users. Common mental disorders account for only £0.67 million of the overall costs per 100,000 population aged over 18 years.

There are modest but significant cost implications associated with the introduction of the modelled scenarios across the authority (figure 1). All but one of the models offer a lower overall cost of care, in spite of the cost of their implementation. The most favourable models are 'The Grange', the 'Daily Living Programme' and 'Hospital at Home' (all reduce overall costs by between 2.5 and 4.5%). The impact of particular models on specific user groups is more pronounced; for example, The Grange model was associated with more than a 20% reduction in the estimated costs of care for the SMI group. (To illustrate, this significant reduction is due to the fact that 30% of potential admissions

**Figure 1 Percentage change in costs following introduction of model (all patient groups)**



could be dealt with by partial hospitalisation, length of stay could be reduced by 60% and only 38% of patients referred were admitted to full hospitalisation (Scott et al., 1994).

### Implications

The findings presented need to be seen in the light of key assumptions made during the modelling process:

- transferability of models (will models developed successfully elsewhere have a similar impact in a new population or area?);
- independence of models (service models have been treated as independent entities, rather than in combination);
- relationship of models to unmet need (models do not make any assumptions about underlying levels of unmet need);
- start-up costs of models (the financial — as opposed to economic — costs of implementation, particularly capital costs, need to be taken into account).

These assumptions and limitations can be addressed in a number of ways at a local level, for example by carrying out a needs assessment exercise, an audit of actual service utilisation profiles in key user groups or a more in-depth option appraisal of selected models.

### Acknowledgement

This article is a summary of a commissioned study. We thank Mr Martin Bould, Assistant Director of Major Projects, Barking and Havering Health Authority, for permission to reproduce extracts of the final project report here.

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### **Compliance therapy**

As part of a Medical Research Council funded randomised controlled trial conducted by researchers at the Department of Psychological Medicine, Institute of Psychiatry, CEMH carried out a cost-effectiveness evaluation of a new therapy for improving medication compliance amongst people with a psychosis. The main conclusions from the study are summarised below:

- Compliance therapy was found to be effective over 18 months when compared to non-specific counselling. It is also cost-effective.
- Although there were no apparent differences in the cost implications associated with each intervention, compliance therapy was found to be more a more clinically effective intervention as measured along selected scales of outcome.
- There may therefore be economic as well as clinical grounds for extending the availability of compliance therapy.

There were however some caveats attached to the conclusions reached:

- Wide cost variations and sample attrition meant there was insufficient power to test for statistical significance.
- Cost-effectiveness results relate to a sample of patients receiving compliance therapy in a psychiatric in-patient ward, and may not be generalisable.
- The evaluation ran for 18 months; improvements in compliance over this period may not have their full cost impacts until rather later.

Full details of the economic study can be found in:

Healey, A., Knapp M.R.J., Astin, J., Beecham, J., Kemp, R., Kirov, G. and David, A. (1998) Cost-effectiveness evaluation of compliance therapy for people with psychosis. *British Journal of Psychiatry*, 172, 420-424.

### **Training family support workers to relieve carer burden**

The aim of this study is to assess the impact of a training programme on the ability of family support workers (FSW), employed by an independent sector organisation, to relieve the burden on carers of people with schizophrenia. Half of the FSWs have been randomly allocated to receive the training programme. Cases referred to the experimental and control group are assessed in terms of carer stress, needs, burden, quality of life, cost of care and service satisfaction, and these measures are repeated at the end of the intervention period. If successful, the training programme will be offered to the control workers and then disseminated more widely.

This research began in January 1997 and is due to be completed by the end of November 1999.

Enquiries should be directed to Ann Davies, Research Associate, Department of Psychiatry, University of Manchester, Mathematics Building, Oxford Road, Manchester M13 9PL. Telephone: 0161 275 5221, Fax: 0161 275 3924.

# Survey of day activity settings for people with mental health problems

Jennifer Beecham, Justine Schneider and Martin Knapp

## Introduction

In 1997, the Personal Social Services Research Unit, funded by the Department of Health, conducted a postal survey of day activity settings for adults with mental health problems in the South Thames NHS region. Day activity services form a central component of support packages for people with mental health problems yet, while the number of settings has increased considerably since the previous large-scale survey (Carter, 1981), there are still no centrally-compiled registers of day settings from which a 'map' of service provision can be created.

For the purposes of this study the term *day settings* refers to any facility (for example, day hospital, day centre or work-related scheme) which typically provides social or practical communal support and which has paid volunteers or staff present in a non-domiciliary and non-residential capacity.

When the survey was undertaken, the South Thames area was one of eight health regions in England, with a population of just under seven million. Health services were purchased by twelve commissioning authorities, each of which served a population of between 300,000 and 938,000. There were 64 NHS Trusts. Day activity services were also provided by the social services departments of four county councils and twelve London boroughs and numerous voluntary (non-profit) organisations.

Various sources of information were used to obtain the contact names and addresses of day activity settings for people with mental health problems. Of the 308 addresses identified in the South Thames region, 45 were found to serve other client groups or had closed and two were organisation headquarters. This left 261 valid addresses of which 60% (155 settings) completed the postal questionnaire (see box 1).

### Box 1 Questionnaire coverage

- identification of the setting;
- a broad description of location and agency links;
- number of staff, their training and working hours;
- the types of support provided within the setting;
- income sources and expenditure for 1996-97; and
- information about the users of the setting.

## Location

Predominantly, the settings in our sample were located in urban areas, either town centres or residential areas (85%). Forty-one per cent of the day activity services were located on stand-alone sites, separate from other service providers.

Thirty-seven settings were linked to community mental health teams or other mental health services and 28 settings were based in other provider units such as residential homes or hospitals.

## Size and opening

Between 110 and 120 settings recorded attendance figures for the morning and afternoon sessions on Monday to Friday with an average of 23 people attending each session (median 20). Far fewer settings were available in the evenings: 24 settings were open on Wednesday evenings, 14-19 settings were open Monday, Tuesday and Thursday evenings, but only eight settings were open on Friday evenings. On average, 25 settings were available during the day on Saturday and Sunday but only four were open in the evenings at weekends.

Only a dozen or so settings did not keep a register of users, and the accompanying documentation usually identified these as drop-in centres or as having an 'open access' policy. For the 44 settings which had an active waiting

list, there were between one and 60 people on the waiting list (mean twelve people, median eight people).

Over the last ten years, an average of ten settings have opened each year. Forty-three settings in our sample had been open longer than ten years and 44 had been open more than five years.

### Staffing

About half of the settings employed social care staff on-site and a quarter were staffed by nurses. Occupational and other therapists were employed in 35 and nineteen settings respectively, but a surprisingly low number of settings were supported by either psychiatrists or psychologists (eleven settings). Three-quarters of the settings had management staff on-site but only a quarter had administrative support. Only 36 settings reported having staff vacancies.

### Integration with the wider community

Sixty-nine respondents said the building was used for other activities when the day service was not open. A total of 113 activities were recorded; 39% of these activities were related to mental health (for example, stress management, anxiety or eating disorder support groups); 17% were services for other client groups or staff (such as elders' groups, craft groups for visually impaired people); and activities used by the wider community formed the remainder (such as leisure activities or slimming groups).

A quarter of settings reported they were noticeably or fully integrated with leisure, employment or education services for people without disabilities, but about a third said they were not at all integrated with such services. However, 64 settings (41%) recorded the details of 205 other local day activity settings with which they had contact.

The availability of transport can have a large impact on the opportunities open to people. When asked how well the setting was served by public transport

- 130 settings said they were adequately served by public transport, 50 of which also provided transport to and from the setting;
- Twenty settings said they were poorly served by public transport, twelve of which provided transport; and
- Three settings said there was no public transport in the area and transport was provided by all of these settings.

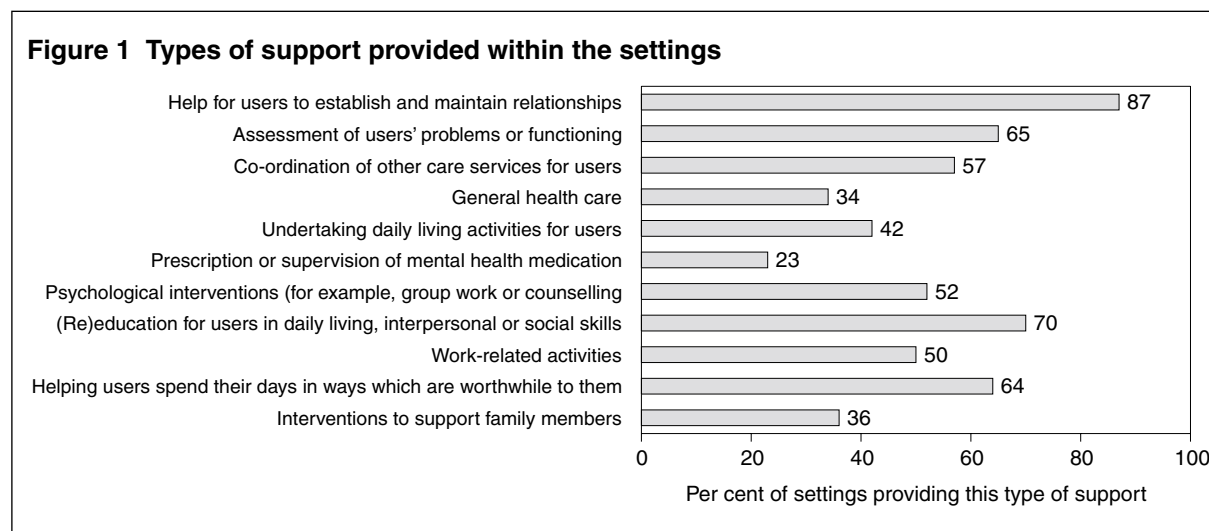
### Sector and orientation

Respondents were asked to identify the sector and principal orientation of their setting. Both data were available for 133 settings, and table 1 shows an expected pattern of associations: all but one of the settings principally orientated towards providing treatment were managed within the health sector, and those primarily providing social support were more commonly managed by social services departments or non-profit sector organisations. Settings principally providing work tended to be managed within the non-profit sector.

Principal orientation	Sector / managing agency			N
	LASSD <sup>a</sup>	NHS Trust <sup>b</sup>	Non-profit <sup>c</sup>	
Treatment	1	30	0	31
Social support	24	9	39	72
Work	3	9	18	30
Total	28	48	57	133
<i>Notes</i>				
a. Local authority social services department.				
b. Specialist mental health, hospital or community Trust.				
c. Voluntary and other not-for-profit organisations.				

## Content of services

Respondents were also asked to say whether or not they provided any of the eleven types of support identified in the *WHO International Classification of Mental Health Care* (de Jong, 1997). This schedule provides a measure of service content by identifying what *groups of professionals do to groups of patients*.



All settings provided more than one of these types of support. Figure 1 shows that most settings provided help for users to establish and maintain relationships, problem assessment, (re)education in daily living, interpersonal or social skills, and help for users to spend their days in ways worthwhile to them. However, only about a third of settings provided interventions to support family members and only a quarter supervised medication. These data clearly show that day settings provide a multi-faceted service, but different mixes of support are provided by different settings. This type of information can help referrers ensure that users receive a service that meets their individual needs for support. Although many of the types of support identified by the ICMHC *modalities* could be seen as secondary functions, they still provide important components in the care of people with mental health problems. For example, although half of the settings said they provided work-related activities, only 30 settings mentioned work as the principal orientation of their setting.

## Characteristics of regular users

Each setting was asked how many people with mental health problems use the setting regularly each week. Of the 155 respondents, 148 answered this question, reporting a total of 7466 users.

Typically, the youngest regular users were aged between 16 and 20 years old. For 83 settings (54%) the oldest users were between 45 and 65 years. However, even though the survey excluded settings catering specifically for elderly people with mental health problems, 66 settings were used regularly by people who were between 66 and 100 years old.

Broad indicators of the characteristics of the regular user group were also requested. Although the number of settings which provided data varied for each domain, these characteristics of the full regular user population were determined:

- 3 per cent of regular users normally live in a hospital ward;
- 13 per cent have been in hospital for psychiatric care in the last three months;
- 17 per cent live in staffed accommodation;

- 41 per cent are taking regular neuroleptic medication;
- 6 per cent are subject to a Mental Health Act section;
- 14 per cent are former long-stay hospital patients; and
- 37 per cent have some additional problem such as physical illness or disability (13 per cent), aggressive or disruptive behaviour (7 per cent), use of illegal drugs (7 per cent) or misuse of alcohol (10 per cent)

### The costs of day activity settings

Using information on revenue expenditure, costs were estimated for 122 of the settings in the sample. Revenue costs per annum range from £3200 to £450,000 around a mean expenditure of £109,700 per annum (median, £88,800). To

facilitate cost comparisons an average cost per user session was estimated for each setting to take into account the number of users and the number of sessions each setting is open. Revenue costs per user session are between £0.88 and £68.26 around a mean value of £11.65 (median £9.16). Costs variation was found to be a result of the services each setting provided (as measured by the types of support and principal orientation) rather than the management sector *per se*. Table 2 provides some descriptive information on the variation in revenue costs found as a result of their orientation.

**Table 2 Revenue costs per user session by principal orientation**

	Mean cost per user session <sup>a</sup>	95% C.I.	N
Treatment	£19.29	£14.40 – £24.19	27
Social support	£7.34	£6.01 – £8.67	61
Work	£12.53	£9.59 – £15.47	21
Other <sup>b</sup>	£14.52	£8.01 – £21.03	13

**Notes**

- a. 1996-97 prices.
- b. Includes those settings which said their main orientation was towards social support *and* work or treatment, and those settings which listed specific attributes of the service (n=5).

Justine Schneider was formerly at the PSSRU and is now at the Centre for Applied Social Studies, University of Durham.

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### Key points

- Most settings are located in urban areas or towns.
- Most are only open during weekday working hours.
- On average 20 people attend each session.
- Day activity services still tend to be closely linked with other specialist services yet few receive support from psychiatrists or psychologists.
- A quarter of the settings are principally orientated towards providing treatment but most settings provide between five and eight types of mental health support.
- Mean revenue costs are between £0.88 and £68.26 per user session.

## South Leeds Evaluation

In 1994, CEMH was commissioned to work alongside the Community Care Division of the Nuffield Institute, University of Leeds, to provide data on the cost implications of a new acute mental health service developed for residents living in South Leeds and to analyse the balance of inter-sectoral expenditures on all mental health services in the same location.

A more detailed description of the study and results can be found in the Nuffield Institute for Health Community Care Division Working Paper 7.

(Information and Admissions Office, Nuffield Institute for Health, 71-75 Clarendon Road, Leeds, LS2 9PL.

Telephone: 0113 233 6942; website: <http://www.leeds.ac.uk/nuffield/>; email [nuffield@leeds.ac.uk](mailto:nuffield@leeds.ac.uk))

The main conclusions reached are summarised below:

- Cost-related data were collected and analysed for people primarily supported during their acute episode by the in-patient service in Ward 42 at St James' Hospital or the Intensive Home Treatment Team (IHTT) – a home-based acute care service. The average acute care cost for the IHTT (n = 22) and Ward 42 (n = 24) samples was £2606 and £3615 respectively. The parallel service outcome evaluation indicated that users of the IHTT viewed their treatment more positively than did the in-patients.
- The sample members used a broad package of hospital- and community-based services in the 12-month period prior to and 18-month period subsequent to their acute episode. It is important for health care purchasers and providers to consider the delivery of specific psychiatric interventions in the context of the total support requirements for people with mental health problems. These include housing, income (often obtained through receipt of social security benefits), occupation and meaningful day activities, mental health care provided through other agencies and services, generic health and social care services, and the support provided by relatives and friends.
- In 1994/95 over £5 million was spent on mental health services in South Leeds. The health sector was responsible for only half of this expenditure through the Trust's delivery of acute services and those providing longer-term support. The local authority social services department and voluntary sector organisations also play important roles, mainly in the provision of residential and day care services. There was some evidence of inter- and intra-agency working within this mixed economy of mental health care but improved communication between the organisations about their roles and activities and the separate and joint financial contributions may enhance the linkages between the component parts of the mental health care system. There should also be adequate recognition of the important role played by the primary care services.

# Child and adolescent mental health services in Brixton and Croydon

Daniel Chisholm, Patrick Byrne and Carla Croft

## Policy context

There has been increasing policy focus on containing the short- and long-term costs of childhood disorders to the individual and to society by increasing provision of early intervention services (Beitchman, Inglis and Schachter, 1992; Light and Bailey, 1993). In spite of the significance of economic considerations in the treatment and prevention of child and adolescent mental health problems, previous epidemiological investigations have been largely confined to the study of mental health among the individuals concerned, rather than the broader and more long-term public health and economic aspects. Consequently, there is only a small body of research in child mental health care that incorporates a cost dimension or addresses comparison of cost-effectiveness between treatment modes (Knapp, 1997; 1999).

## The Brixton – Croydon CAMHS study

The aims of the study, funded by the NHS R&D Programme and carried out in two child and adolescent mental health services in Croydon (Dr Patrick Byrne) and Brixton (Dr Anula Nikapota), were threefold:

- to develop a system for the evaluation of child and adolescent mental health services (CAMHS), based upon a battery of measures of process and outcome;
- to assess the reliability and validity of these measures by the criterion of detailed and explicit research interviews;
- to collect data on all services and supports which children in the sample receive, in order to calculate the costs associated with the two models of service delivery.

The sample consisted of children of both sexes aged 5 to 11 years inclusive who attended at least one out-patient session at the two centres in Brixton and Croydon with disorders of emotion or conduct. A small number of children who had pervasive developmental disorders, severe learning disability or eating disorders were excluded from the study. A range of clinician and researcher-administered measures were employed (box 1). The focus of the economic

### Box 1 Summary of measures

#### Administered by clinicians

*At first contact:* Demographic Data, Clinical Problems checklist, ICD 10 Diagnosis, Case complexity/severity; Child/parent problem priority; Treatment plan and goals.

*At final contact (case closure):* Administrative status; Interventions checklist; Clinical change — symptom outcome; Outcome of treatment: 1) 3 Specific aims, 2) Global outcome, 3) Degree of Completion, 4) Brixton Psychosocial Outcome.

#### Administered by researcher

*At first contact:* Strengths and Difficulties Questionnaire (SDQ); Parental Account of Children's Symptoms (PACS); Client Service Receipt Inventory CSRI – C); Parent Consumer Satisfaction Questionnaire. Teacher version of SDQ sent by post to child's school.

*At final contact:* Repeat above; repeat clinical dataset outcome measures; postal questionnaire to referrers on outcome; teacher SDQ repeated by post.

analysis was to observe differences *over time*, rather than between the two services. This has enabled inferences to be drawn with respect to the impact of specialist child mental health services on costs and outcomes.

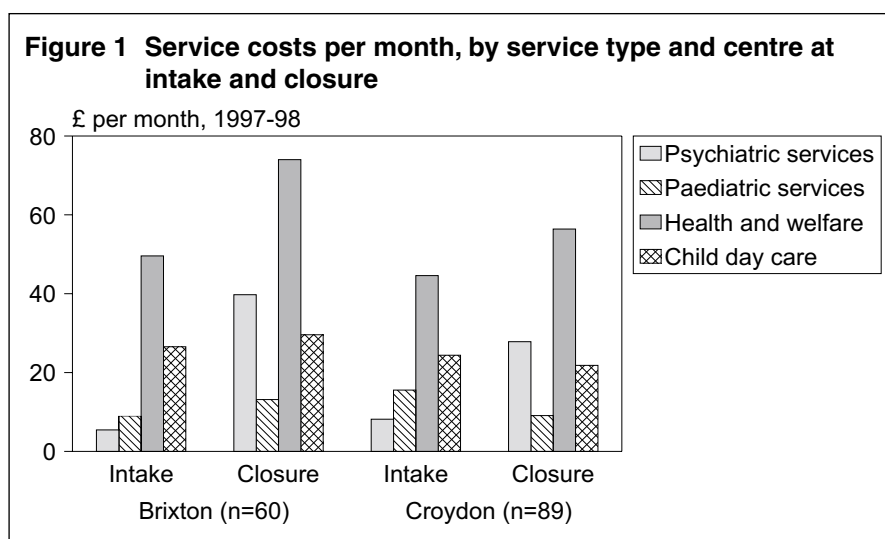
**Costing methods** Measures of direct cost were based on service utilisation data obtained for the pre-referral period (previous twelve months), and for the following five months of the treatment period (for many children, this represented case closure). Service utilisation data were collected retrospectively, using an adapted and recently piloted version of the Client Service Receipt Inventory (CSRI-C; see Knapp, Scott and Davies, 1999) that is integrated with the demographic section of the Parental Account of Children's Symptoms (PACS). Costs were calculated for each service using previous research studies and nationally collated unit cost data (Netten, Dennett and Knight, 1998). All costs relate to the financial year 1997/98. Service utilisation and cost data were combined in order to generate estimates of total and component costs for each sampled individual, subsequently aggregated into scores for the two sites. Costs were divided into four categories (paediatric hospital services; health and welfare services; child day services; and child mental health services), in order to observe changes in the distribution of costs between different agencies and service types. Data on the input from family members were also collected.

**Preliminary service cost results** The monthly costs of each of the four service categories are given in figure 1. Monthly costs of child mental health services increased significantly in both areas over the period of study, reflecting the additional inputs provided to meet the needs of the children. There is also a statistically significant increase (at  $p < 0.05$ ) in the cost of health and welfare services, from £49.59 to £73.99 in Brixton, and from £44.60 to £56.39 in Croydon. In Brixton, there were also slight increases in cost for paediatric hospital services and child care day services (though not statistically so), whereas in Croydon there were modest decreases in cost. The overall service cost per month increased significantly in both areas, from £90.55 to £156.46 in Brixton ( $p < 0.01$ ) and from £92.71 to £115.11 in Croydon ( $p < 0.05$ ).

The description of costs in isolation of other characteristics of the sampled population can hide underlying relationships that may

have an important bearing on service needs and costs. Bivariate and multivariate relationships are therefore being explored, both for service costs in their totality and for child mental health services specifically.

**Impact on families and informal carers** An important consequence of child mental health problems is the impact on families. The effect of the child's behaviour on the careers of principal carers was considerable. Overall, 33% of principal carers (nearly all mothers) reported that their career had been affected in some way in the year preceding intake, a proportion that only dropped to 27% at the follow-up assessment five months later. The most common effects were disturbance at and enforced absence from work, but a small minority (less than





5%) of principal carers also indicated that they had actually lost their job as a result of their child's behaviour. The impact on the careers of the principal carer's partner (where applicable and where information was offered) appeared to be much less intrusive. No instances of jobs lost were reported, but absence from work had affected a small number of partners.

The costs specifically associated with service utilisation by other family members as a result of the index child's behaviour were computed. In the year prior to intake, 40 households (covering 50 of the sampled children) reported that they had taken up services as a result of the child's behaviour, compared to 22 households (32 children) over the follow-up period. A range of services was used, including GP consultations, social services, out-patient attendances and counselling. For households with more than one child in the study, the costs of these services were allocated *pro rata*. The summed cost for the year prior to intake was £22,384 (or £9327 for a five month period), compared to £4840 for the follow-up period. Mean costs were £187 (sd 725) and £151 (sd 193) for the five months preceding intake and closure respectively. There therefore appears to be a clear additional burden placed on statutory services by other household members directly as a result of the child's behaviour.

### Conclusion

Alongside the comparison of clinician and researcher ratings for a range of outcome measures, the economic component of this study of children referred to child and adolescent mental health services has demonstrated the considerable impact that childhood mental disorders impose on a range of service providers as well as informal carers. Since economic studies of childhood mental disorders are still at an early stage of development, there are also important methodological lessons to be learnt from the conduct of this study, including specification of the set of services with which children and their families are in contact. Further analyses of the inter-relationships between costs and outcomes are now being explored, with a view to assessing the extent to which changes in the clinical status of the children (as a result of their contact with specialist psychiatric services) are associated with altered patterns of service utilisation across the range of service sectors assessed.

### Key points

- Previous CAMHS research has been largely confined to the study of mental health among the individuals concerned, rather than the broader and more long-term public health and economic aspects.
- The Brixton-Croydon CAMHS study has enabled inferences to be drawn with respect to the impact of specialist child mental health services on costs as well as outcomes.
- The overall service cost per month increased significantly in both areas, reflecting the additional inputs that are being provided to meet the needs of the children. The extent to which changes in the clinical status of the children are associated with altered patterns of service utilisation across the range of service sectors is being assessed.

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## **Quality and costs of residential supports for people with learning disabilities**

In 1996 the Department of Health commissioned the Hester Adrian Research Centre (University of Manchester) and the Centre for the Economics of Mental Health to undertake a two-year project investigating aspects of the quality and costs of residential supports provided to people with learning disabilities. Following this, the Irish Department of Health commissioned the Centre for the Study of Developmental Disabilities (University College, Dublin) to undertake a parallel project in Ireland using the same protocols for data collection.

The programme of research investigated the characteristics and needs of, supports provided to, and outcomes experienced by 560 people with learning disabilities. Four types of residential provision were covered by the study. These were:

- five *village communities* operated by independent sector organisations. None of these services had been developed as a direct result of the retraction and closure of NHS learning disability hospitals. Three of these facilities were in England and two were in Ireland.
- five *residential campuses* operated by NHS Trusts. All of these services had been developed as a direct result of the closure of NHS hospitals, and all were in England.
- community-based *group home* schemes.
- community-based *supported living schemes*.

Ten community-based provider organisations participated in the project. Of these, seven were operated by independent sector organisations and three by NHS Trusts. Five of the ten organisations provided accommodation in group homes *and* supported living schemes. All these organisations were in the United Kingdom.

The project was completed in January 1999. The following reports have been submitted to the Department of Health and will shortly be available in the public domain.

Emerson, E., Robertson, J., Gregory, N., Hatton, C., Kessissoglou, S., Hallam, A., Knapp, M., Järbrink, K., and Netten, A. (1999).

*Quality and costs of residential supports for people with learning disabilities:*

a) *A comparative analysis of quality and costs in village communities, residential campuses and dispersed housing schemes*

b) *A comparative analysis of quality and costs in group homes and supported living schemes*

c) *An observational study of supports provided to people with severe learning disabilities in residential campuses and dispersed housing schemes*

Hester Adrian Research Centre, University of Manchester.

Emerson, E., Robertson, J., Hatton, C., Gregory, N., Kessissoglou, S., Hallam, A., Knapp, M., Järbrink, K., Netten, A., Walsh, P., Linehan, C., Hillery, J. and Durkan, J. (1999)

*Quality and costs of residential supports for people with learning disabilities:*

a) *Predicting variation in quality and costs*

b) *Summary report*

Hester Adrian Research Centre, University of Manchester.

Copies of all reports and the instrumentation used in the project will be available from the Hester Adrian Research Centre, University of Manchester, Oxford Road, Manchester, M13 9PL, UK. Further details about the costs study may be obtained from Angela Hallam at CEMH.

# Developmental language disorders: changing economic costs from childhood into adult life

Judy Clegg and Juliet Henderson

## Introduction

Twenty boys with developmental language disorders (DLD) have been followed up from childhood into adult life. At their most recent follow-up interview the DLD group were in their mid thirties. In addition to assessments of their cognitive, social and mental health functioning, an economic assessment was included. The economic costs of the DLD group are compared to their non-language disordered siblings in order to control for family background/functioning and genetics. The aims of the economic assessment are to measure the cost of developmental language disorders within the domains of education, employment and health from childhood into adult life. The preliminary findings of the economic assessment are presented here.

## Background

Developmental language disorders are characterised by a discrepancy between a child's non-verbal cognitive abilities and language functioning. Non-verbal cognitive functioning falls within the normal range for the child's age with a deficit in language development usually shown by a poor performance on standardised assessments of language functioning.

Although traditionally viewed as affecting young children, developmental language disorders have been shown to have a persisting impact in middle childhood, adolescence and adult life with respect to later language development, communicative ability, scholastic achievements, employment, independence, social functioning and mental health (Hall and Tomblin 1978, Cantwell, Baker, Rutter and Mawhood 1989, Beitchman et al. 1994, DeAjuriagierra et al. 1976, Mawhood 1995, Botting, Crutchley and Conti-Ramsden 1998). It is expected that such consequences will have both direct and indirect economic costs, for example, special educational provision needed in childhood and family burden caused by a lack of the individual's social and financial independence in adult life.

Knapp (1997) stresses the importance of long term follow-ups with an economic dimension which focuses on the consequences in adulthood of childhood mental health problems. These studies can provide information on the economic costs incurred throughout an individual's life. Such information is also relevant to the study of developmental language disorders and therefore this study reports on the direct and indirect economic costs of a follow-up of boys diagnosed with developmental language disorder who have now reached their mid thirties.

## Methodology

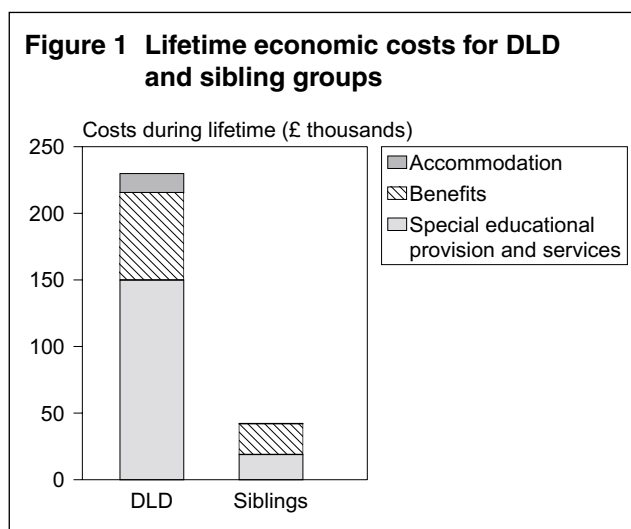
**Participants** Twelve of the DLD group and ten of the non-language disordered siblings have so far been assessed. The mean age of the DLD group is thirty-five years and nine months (sd 2.5). The mean age of the non-language disordered siblings is thirty six years and two months (sd 4.2). The participants were interviewed using the Client Service Receipt Inventory (CSRI). This comprises two formats so that both the participant and an informant (preferably a parent) can be interviewed in order to obtain the most reliable assessment. The CSRI covers the areas of education, accommodation, health and employment. The participants in the DLD group, the sibling group and the informants are widely distributed throughout the UK.

## Findings

**Educational provision and services** Figure 1 shows that the mean costs for the educational provision of the DLD group are £150,000 compared to £19,000 for the sibling group. (We have rounded the results reported in this article.) In early childhood, between the ages of five and nine years, the entire DLD group were in special educational provision, ranging from boarding schools and day schools for speech and language disorders or mental and physical handicaps to language units of mainstream schools. These schools provided special needs services such as speech and language therapy and special needs teachers.

This service pattern changed after the age of nine years with seven of the DLD group entering mainstream education whilst the remainder stayed within special educational provision. This pattern continued until the entire DLD group left full-time education at the age of sixteen years.

The mean costs of the sibling group were much lower as they all attended mainstream education where only two ever received special educational services.



**Employment** The mean unemployment costs of the group are high due to their histories of brief and temporary periods of employment. At the time of interview, only four of the twelve members of the DLD group were employed. The sibling group includes male and female siblings and therefore the employment status of this group is complicated as four of the female siblings are in primary child care roles. With this factor taken into consideration, only one of the sibling group has been unemployed for a period of more than six months.

The mean total amount of lifetime benefits claimed by the DLD group was £66,000. The lower sum of benefits claimed by the sibling group (£23,000) was due to the sibling group having better employment records. The benefits identified include unemployment, housing and disability benefit and income support.

**Accommodation** Compared to the sibling group, the DLD group achieved a lower level of independent functioning. Only six of the DLD group, but all of the siblings, live independently. The remainder of the DLD group either live in the parental home or in sheltered accommodation. The mean lifetime cost of sheltered accommodation in the DLD group is £14,000 and zero for the sibling group.

**Health services** The cost for the receipt of health services was calculated for the twelve months prior to the interview. The mean costs for the DLD group was £500 compared to £100 for the sibling group. Three members of the DLD group have developed significant mental health problems in adult life and used psychiatric services in the year preceding the assessment. This explains the higher health service costs of the DLD group. The remainder of the costs for the DLD group and those for the sibling group for GP services, opticians and dentists.

## Conclusions

The preliminary findings show that within the domains of education, employment, accommodation and health the economic costs of the DLD group

## Case study

At the time of assessment, TH was thirty-four years old. He was diagnosed with a developmental language disorder in childhood. The case study clearly illustrates the changes in economic costs during his life.

### Education

TH attended two boarding schools for children with speech and language disorders and then a boarding school for mentally and physically handicapped children. At the age of eleven years, special educational provision was no longer available for TH and he was mainstreamed into a local secondary school. TH then received no further special educational services or speech and language therapy and left school when he reached the age of sixteen years, having taken no exams.

### Employment

TH's first and only paid job was at the age of seventeen years where he worked as a print worker for two years, earning £70 a week. After three years of unemployment TH undertook voluntary work at a coach station for a year. TH's main interest in life is coaches and therefore he did well, enjoying the position immensely. However, no permanent contract was available at the end of the year and since then TH has not worked.

### Accommodation

TH has lived in the parental home with his mother for the majority of his life. At the age of twenty nine he moved into a privately rented flat which he shared with the landlord. The landlord took advantage of TH and overcharged his rent so that TH was forced to ask his sister and mother to help him out with a substantial loan. TH was forced to move back into the parental home due to his inability to budget his finances successfully.

When TH's unemployment benefit was stopped he failed to tell his family and received no money for a period of three months. Again, the family had to resolve the situation, which involved their time and money. Although TH contributes all his income to the family household, his costs still need to be compensated for by his mother's income.

have been much higher compared to their non-language disordered siblings. These results are consistent in both childhood and adult life. The high education costs illustrate the burden placed on local education departments to provide adequate educational support for these children. More rigorous statistical tests will be used on the full sample. However, the initial results indicate that the DLD group was overwhelmingly more expensive across all the cost categories.

The types of economic costs for the DLD group have changed from childhood into adult life. In childhood, the direct costs incurred by special educational provision were very high. In adult life, most direct costs arose from the amount of benefits claimed and the receipt of psychiatric health services. The progression of the DLD group into adult life also saw the emergence of indirect economic costs to parents and carers caused by a lack of social and financial independence.

As the sibling group share the same parents and family background and have incurred lower economic costs it is reasonable to conclude that developmental language disorders are associated with persisting high economic costs from childhood into adult life.

**Correspondence:** Ms Judy Clegg, Developmental Psychiatry Section, E Floor, South Block, Queens Medical Centre, University of Nottingham, Nottingham, NG7 2UH. Telephone 0115 9709946, email Judy.Clegg@Nottingham.ac.; Ms Juliet Henderson, CEMH, email sptejah@iop.kcl.ac.uk); Dr Chris Hollis, Developmental Psychiatry Section, E Floor, South Block, Queens Medical Centre, University of Nottingham, Nottingham, NG7 2UH. Telephone 0115 9709946, email Chris.Hollis@Nottingham.ac.uk.

## Key points

- There are high economic costs associated with developmental language disorders and these persist well into adult life.
- The lower economic costs for the sibling group suggests that the high economic costs could be specifically associated with DLD.
- The economic costs of the DLD group change, with the incidence of indirect costs increasing in adult life.
- Direct costs also change from special educational provision in childhood to benefits and receipt of psychiatric services in adult life.

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## The costs of social phobia and depression: secondary analyses of the ONS Surveys of Psychiatric Morbidity

Anita Patel, Martin Knapp and Juliet Henderson

CEMH is currently conducting secondary analyses of the psychiatric morbidity surveys. The surveys provide data on the prevalence of psychiatric disorders, services used by respondents, time off work and treatment patterns. This work is focusing on (a) social phobia and (b) depression (with co-morbid anxiety). The aims of the analyses are to:

- estimate the overall costs related to the two neurotic disorders
- examine sub-group differences in costs (for example, comparing those with just social phobia or depression with those who have co-morbidities)
- examine treatment patterns (including use of prescribed medications) associated with each disorder

Results will be available in summer 1999.

Funding: SmithKline Beecham Pharmaceuticals.

# Community mental health care in low-income countries: a role for health economics

Daniel Chisholm

## The global burden of mental disorders

An accumulating body of evidence has emerged, particularly over the last five years, which points to the massive burden that mental disorders impose upon societies throughout the world. Four collaborative reports stand out in particular. The first of these, a collaboration between the World Bank and the World Health Organisation, entitled *Investing in Health* (World Bank, 1993), calculated that neuropsychiatric disorders account for 8.1% of the global burden of disease (as measured by disability adjusted life years). Despite the immense burden that this report pointed to, it did not suggest that mental health should belong to the package of essential clinical services. In the second collaborative report, the *Global Burden of Disease* (GBD), compiled by the Harvard School of Public Health, the WHO and the World Bank, the proportion of GBD caused by neuropsychiatric disorders was revised upwards to 10.5% (Murray & Lopez, 1996). Psychiatric disorders account for five of the ten leading causes of disability — unipolar depression, alcohol abuse, bipolar affective disorder, schizophrenia and obsessive compulsive disorder. The burden imposed by neuropsychiatric disorders is projected to increase to 15% of GBD by the year 2020.

The third report, *Psychological Problems in General Health Care*, is based on a major WHO collaborative study in 15 primary care sites across both developed and developing regions (Ustun and Sartorius, 1995). Overall, primary care physicians identified 23.4% of attendees as being a 'case' with a psychological disorder (while a research instrument identified 33%). Finally, *World Mental Health* (Desjarlais, Eisenberg, Good and Kleinman, 1995) specifically concerned itself with the burden of suffering imposed by mental and psychosocial health problems on low-income countries. On the basis of the report's findings, the authors made a plea for mental health to be placed on the international agenda, backed up by recommendations and specific initiatives for meeting the challenges posed. The report was presented to the United Nations in 1995 and, following the Director General's response, the UN has set up a major initiative, led by WHO, entitled 'Nations for Mental Health', the aim of which is to improve the mental health of the world's underserved populations.

The increasing recognition of mental health as a significant public health issue has led to additional demands for resources that are already stretched. There is therefore a requirement to demonstrate that investment is needed and worthwhile, which translates into generating evidence on affordable and cost-effective mental health care and prevention strategies. Such an evidence base is an important step in convincing governments and international agencies that additional mental health resources, most notably in training, drugs and basic infrastructures, will generate significant health gain and other benefits. Unfortunately, however, there is currently a dearth of cost and outcome data upon which to base these decisions. The paucity of mental health economic evaluative studies in low-income countries is a significant stumbling block to the investment of resources in mental health by governments and international agencies.

## Mental health economics demonstration project in India and Pakistan

In collaboration with the Institute for Health Sector Development, London, the Institute of Psychiatry, Rawalpindi (Pakistan) and the National Institute of Mental Health and Neurosciences, Bangalore (India), CEMH has undertaken a

mental health economics demonstration project in low-income countries (Chisholm et al., 1999). The end goal of the research can be stated as the generation of cost and outcome data that will enable more effective, efficient and equitable decision-making in the allocation of resources to mental health care.

Specific objectives included:

- the generation of a framework and accompanying guidelines for the conduct of mental health care economic evaluations;
- a review of key issues relating to the structure, organisation, delivery and financing of mental health care as they relate to low-income countries;
- the development and testing of protocols for the economic evaluation of community mental health programmes.

The model of mental health care and prevention that is being most widely advocated as the most appropriate way forward in many economically developing countries is one that is integrated into the local community context, particularly the existing primary health care system. The strengths of this approach include the wide coverage that it can expect to attain, the holistic concept of health that it engenders, and the low costs of its implementation. Our two collaborating institutions have access to sites where the standard national package of primary care is being delivered and sites where mental health activities are also included.

The design of the demonstration project was to recruit and follow-up a sample of patients meeting ICD-10 diagnostic criteria for neurosis (largely depressive and anxiety disorders) from two rural catchment areas in each site — one with integrated primary/mental health care and a further locality with standard primary health care. A two-stage process was employed for recruitment: first screening for mental disorder via the Self Report Questionnaire (SRQ); then, for all those scoring above the SRQ threshold for caseness, a psychiatric assessment interview was administered. Only new episodes (as opposed to cases) were included, defined as the presence of a set of symptoms for which no psychiatric treatment had been sought in the last one month. Study subjects were informed of their diagnosed health condition and invited to seek local treatment.

## Research findings

The project generated a number of outputs, among them i) new collaborative links, ii) new insights, understanding and training into economic aspects of mental health care, and iii) a large and rich data set on costs and outcomes for a sampled mentally ill population. On the basis of these outputs, we can conclude that the conduct of mental health economic analysis in low-income countries is both feasible and practicable, and we are confident that centres in low-income countries who possess a basic grounding in research methodology and an interest in addressing issues of cost-effectiveness will be able to carry out economic analysis alongside their other activities.

***Unmet mental health needs in the community*** The project reinforced the findings of previous epidemiological studies that common mental disorders are indeed common (an estimated 12-18% of the adult populations of the Bangalore catchment areas, and 28-39% in the Rawalpindi site), and that there exists a significant pool of unmet mental health need. This study has also been able to investigate the economic consequence of this identified unmet need at the level of individuals, families and local health services. For example, it was found that only just over half of the sampled populations in the Bangalore site had contacted services at all, and an even smaller proportion (20-30%) were in contact with government primary health care workers.

***The cost of common mental disorders*** Despite, and to a larger extent because of, low rates of contact with health care professionals able to detect and manage psychiatric morbidity, the health care and other patient/family



**Table 1 Summary of changes in cost and outcome over period of study**

	Bangalore site		Rawalpindi site	
	<i>Jigani</i>	<i>Sakalawara</i>	<i>Lehtrar</i>	<i>Taxila</i>
	(Standard care)	(Integrated care)	(Standard care)	(Integrated care)
<b>Costs</b>				
Health care costs	Lower	Higher	Higher	Higher
Patient and family costs	<b>Lower</b>	<b>Lower</b>	<b>Lower</b>	<b>Higher</b>
Total costs	<b>Lower</b>	Lower	<b>Lower</b>	<b>Higher</b>
<b>Outcomes</b>				
Depression score (HDRS total)	<b>Improved</b>	<b>Improved</b>	<b>Improved</b>	Improved
Disability score (BDQ total)	<b>Improved</b>	<b>Improved</b>	<b>Improved</b>	Worsened
Quality of life (WHOQOL domains)	Improved	<b>Improved</b>	<b>Improved</b>	No change

Figures in **bold** indicate a statistically significant change.

opportunity costs incurred by sampled individuals with a diagnosed common mental disorder are considerable (by local standards; there are 65 Indian Rupees and 80 Pakistani Rupees to £1, but the daily wage of an agricultural worker is only Rs 50-100 in India, Rs 150 in Pakistan). At baseline assessment, the mean cost associated with health care were Rs 160-370 per month in the Bangalore site (of which over 80% was private expenditure), and Rs 550-650 in the Rawalpindi site (the majority of which was privately incurred). The single largest category of health care cost was consultations with local private general or traditional practitioners (neither of whom are qualified or trained to detect or treat psychiatric morbidity). Thus, whilst individuals are seeking help, and spending significant amounts of money in the process, they are not in the main receiving appropriate care for their mental health condition. The imputed costs associated with reported levels of informal caregiving (mainly by female members of the individual's extended family), travelling time/expense and lost days of work are also very considerable (an estimated Rs 686-851 in the month preceding baseline assessment in Bangalore, and over Rs 3,500 in Rawalpindi).

**Impact of integrating mental health care into primary care** Calculation of the relative cost-effectiveness of the intervention itself, which consisted of training and supporting primary health care staff in the detection and management of mental disorders, was not in itself a specific objective of this study (since such an analysis would require a larger sample, a longer follow-up period and a more powerful, experimental study design than was possible with the available time and resources). Our use of an observational, community survey design in fact complicates evaluation of the impact of an intervention implemented at the PHC facility level, particularly in settings where only a modest proportion of the sampled populations are actually in contact with primary care workers. The outcome results obtained also appear to suggest a different intervention effect, namely the interaction of subjects with the mental health professionals who undertook the research interviews. The very act of interviewing individuals about their mental health state, and the consequent advice to seek care locally, appears to have had a powerful effect, most notably in the Lehtrar catchment area (in which no mental health training had been provided) where high levels of psychiatric morbidity at the baseline assessment saw very significant improvements over the course of the study.

In terms of changes over time *within* (rather than between) catchment areas, the results for both localities in the Bangalore site, and in the Lehtrar locality of the Rawalpindi site, suggest that alerting members of the local population to their mental health care needs (and in the case of the integrated care locality in

Bangalore, also training primary care workers in mental health care) is not only associated with clear improvements in the outcome domains of depression, disability and quality of life, but also reduces the economic burden of mental disorder (Table 1). By contrast, there are increased costs of care in the integrated care locality of the Rawalpindi site and no clear benefits in terms of client outcomes, which suggests that the intervention has had no clear beneficial impact on the mentally ill population of that area (a plausible reason for this is that there was a strong preference for, and consequent reliance on, private care providers in this population).

### **Future policy priorities and research needs**

The most pressing policy priority is to enhance the recognition of common mental disorders as a public health concern, not only through epidemiological, clinical, economic and social research, but through the dissemination of that evidence to decision-makers at all levels of federal and local government. Increased provision of appropriate care and resources for common and more severe mental disorders cannot be expected to occur without a corresponding improvement in the awareness and understanding of key decision-makers. An important aspect of this awareness-raising campaign, already under way as part of the Nations for Mental Health initiative, is the reduction of stigma towards mental illness, both at a policy and public level. Official support and sponsoring of low-cost, wide-coverage mental health promotion campaigns would constitute a significant step forward in this regard, as well as being likely to represent a highly cost-effective use of resources.

Training in the detection and treatability of common mental disorders needs to be accompanied by the availability of suitable drugs. Whilst the high acquisition cost of newer anti-depressants is an obvious constraint, conventional tricyclics are very cheap and equally effective (the newer class of drugs are considered no more efficacious, but are better tolerated). And yet in many of the pharmacies visited in the present study, such medication is not stocked or available. The establishment and implementation of an essential drug list for mental (and neuropsychiatric) disorders is likely to represent a further policy priority in many low-income countries.

Finally, whilst the current study has generated data on the service utilisation patterns and costs of individuals with a diagnosed common mental disorder among two catchment area populations in India and Pakistan, there remains a chronic shortage of economic data to support mental health policy or resource allocation discussions at a national or international level. There is consequently a need to undertake further studies that not only address the relative cost-effectiveness of alternative interventions or strategies (using a prospective, experimental design), but also broaden our understanding of the inter-relationship between psychiatric morbidity and disability on the one hand, and access to and uptake of services on the other. Indeed, interventions for common mental disorders need to be carefully planned in accordance with the prevailing health-seeking behaviours of the local population(s) as well as other demographic, cultural and socioeconomic factors, since these factors are likely to contribute significantly to their overall effectiveness and cost-effectiveness.

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### **Key points**

- Mental disorders impose a very heavy clinical, social and economic burden on societies throughout the developing world, but there is a dearth of cost and outcome data upon which to base needed investment.
- A cost-outcome study of community mental health care in Bangalore, India and Rawalpindi, Pakistan has demonstrated the feasibility and importance of conducting economic analysis in these contexts.
- Increased recognition and awareness of mental disorders as a public health burden, improved availability of essential psychotropic drugs and further cost-effectiveness studies are identified as key policy priorities.

### **Longitudinal investigation of depression outcomes (LIDO)**

This is an international study of the quality of life and economic correlates of recognised major depression in primary care. Participating countries are Spain, Israel, Russia, Australia, Brazil and USA. The study design is observational, based on a prospective cohort of patients meeting diagnostic criteria for clinical depression and recruited in primary care settings.

#### **Aims of the economic dimension of the study**

- Compare the extent to which treated and non-treated people with major depression make use of services;
- Measure the economic impact of depression on individuals and health services;
- Explore the associations between service costs, depressive symptoms and quality of life.

For further information, please contact Daniel Chisholm.

### **The EPSILON Study: needs, outcomes and costs of people severely disabled by schizophrenia in five European countries**

This study is funded under the European Union's BIOMED 'Concerted Action' programme to assess the needs, outcomes and costs of people severely disabled by schizophrenia in five European centres (Amsterdam, Copenhagen, London, Santander, Verona). The study aims to develop and apply a set of standardised measures in the following domains of care for people with schizophrenia:

- needs for care (Camberwell Assessment of Need; CAN)
- service utilisation (Client Service Receipt Inventory; CSRI)
- service satisfaction (Verona Service Satisfaction Scale)
- quality of life (Lancashire Quality of Life Profile; LQOLP)
- care-giver burden (Involvement Evaluation Questionnaire; IEQ)

#### **Two main stages of the study**

- To standardise, translate and qualitatively validate the above measures
- To administer these instruments to a sample of 50-100 patients in each site, both in order to assess the psychometric properties of the measures and to provide a data set from which to make intra- and inter-cultural comparisons of costs and characteristics.

Results will be available late 1999. For further information, please contact Martin Knapp or Daniel Chisholm.

### **Economic evaluation of Quetiapine**

This is a multi-centre, international double-blind RCT, funded by Zeneca Pharmaceuticals. It involves concurrent data collection for a range of clinical, economic and quality of life outcomes for approximately 400 patients across fifteen countries. Clinical trials demonstrate that Quetiapine is an effective atypical antipsychotic drug for the treatment of patients with schizophrenia and other psychotic disorders. CEMH is examining the economic consequences of its use.

The study aims to:

- Describe care and treatment patterns.
- Collect unit cost measures for services used in each country
- Conduct a cost-consequences evaluation, examining the costs and multiple outcome consequences of the treatment of people with chronic or subchronic schizophrenia with Quetiapine compared to haloperidol.
- Re-estimate cost-consequences for a number of individual countries.
- Conduct a multivariate analyses of cost and outcome variations across samples.

For further information, please contact Anita Patel at CEMH.

## A 'Ready Reckoner' for estimating staff costs in the NHS

Ann Netten, Jane Knight, Jane Dennett, Roger Cooley and Adam Slight

The Ready Reckoner project was funded by the Department of Health as part of the Human Resources and Effectiveness Initiative. The aim of the research was to develop an approach to estimating health service staff costs in a consistent and comprehensive way which is appropriate to use when evaluating the cost consequences of innovative uses of staff resources. One of the main objectives was to develop a piece of software to provide default estimates for a range of unit costs for a wide variety of doctors, nurses and professions allied to medicine. The software allows users to replace the default values with local information where appropriate.

### Context

The NHS workforce is large, highly trained and very costly. The degree to which this workforce is employed in a cost-effective way clearly has important implications for what can be produced from such a large-scale operation. Concerns about how best to use this workforce underlie many innovative ways of working in the NHS (such as nurses taking over tasks traditionally undertaken by doctors).

When evaluating the cost-effectiveness of innovative patterns of staff working, it is essential that all the associated costs are appropriately identified so those involved in planning for the future can consider the full implications of variations in skill-mix. It is also important that consistent approaches are used to cost estimation so that like is compared with like when alternative courses of action are under consideration.

<b>Box 1 Health service staff included in the Ready Reckoner</b>		
<b>Community care</b>	<b>Acute sector</b>	<b>Primary care</b>
District nurse Community psychiatric nurse Health visitor Auxiliary nurse	Day ward manager Staff nurse, 24-hour ward Staff nurse, day ward 24-hour ward manager Auxiliary nurse	Practice nurse
Physiotherapist Occupational therapist Speech and language therapist	Physiotherapist Dietitian Speech and language therapist Radiographer Occupational therapist Therapy support worker	
	Pre-registration house officer Senior house officer Registrar Consultant psychiatrist Consultant surgeon Consultant physician	General practitioner

## Training costs

Although the acquisition of skills tends to be rewarded by higher wage rates, the long-term cost differential between skilled and unskilled labour is not reflected by differences in pay. At best, pay differentials may reflect the relative scarcity of particular skills. In the long term we should include the cost of training each type of staff, as if (for example) nurses take over doctors' tasks, more nurses and fewer doctors will need to be trained for such procedures. To incorporate the resource implications of maintaining a trained and skilled workforce into the costs of care delivery, therefore, we need to explicitly value the costs of training and education.

The software allows users to incorporate costs of specific courses where appropriate. Ongoing training is treated as an annual cost, the basis for estimation depending on the type of professional. A rather more complex approach has been required for the inclusion of the investment costs of qualifications. Rather than basing the estimation of investment costs on the notional sum of what it would cost to train the current workforce to the present level of qualification, the objective was to get as close as possible to the long run marginal opportunity cost. The estimated cost is, therefore, what it would cost in order to train one additional whole time equivalent member of staff, given current training requirements and costs. This takes into consideration the cost implications of current training policies.

Default data have been estimated for the national costs of pre-registration training of a variety of nurses, doctors, and professionals allied to medicine. Post registration training costs have also been estimated for community nurses and all doctors.

The components of this investment are:

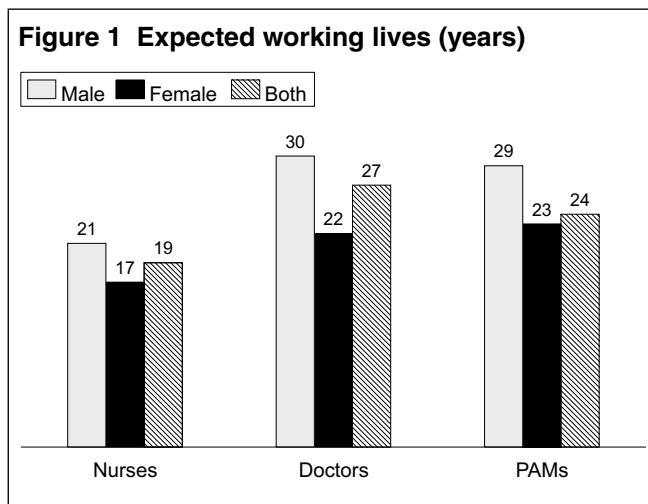
- the costs of tuition;
- costs or benefits from clinical placement activities; and
- living expenses where no salary is paid during training; or
- replacement costs where staff are taken away from their posts in order to train.

Before discounting to reflect the distribution of these costs over time the investment costs of pre-registration training are estimated (at 1997/98 costs) as £36,130 for psychiatric nurses, £197,660 for doctors and £39,740 for occupational therapists. Estimates have also been made of the costs of post-registration training of community nurses and doctors (SHOs, registrars, GPs and consultants) on a similar basis. A nurse is estimated to cost £12,120 in order to qualify as a community graduate nurse. Before discounting to reflect the distribution of costs over time, consultants are estimated to cost £98,430 in post-registration training.

The initial investment costs need to be discounted, to allow for their expected distribution over time, and annuitised so they can be included in the unit costs of the professional. The discounting is straightforward, with the first year of training taken as the base year. Annuitisation, however, requires that we take into account the expected returns on this initial investment. In the case of human capital this means we need an estimate of both the number of years that people will be using the skills acquired through training and the distribution of those years (taking into consideration issues such as career breaks, part-time working and early retirement).

On the basis of analyses undertaken of the 1991 census and 1996 Labour Force Survey, the expected working life of nurses is estimated as between 19 and 22 years, and of doctors as between 26 years and 29 years. Professions allied to medicine were estimated as working about 24 years in total; see figure 1. The data were also used to estimate the expected distribution of these working lives. On the basis of these data a method was developed for allowing for the

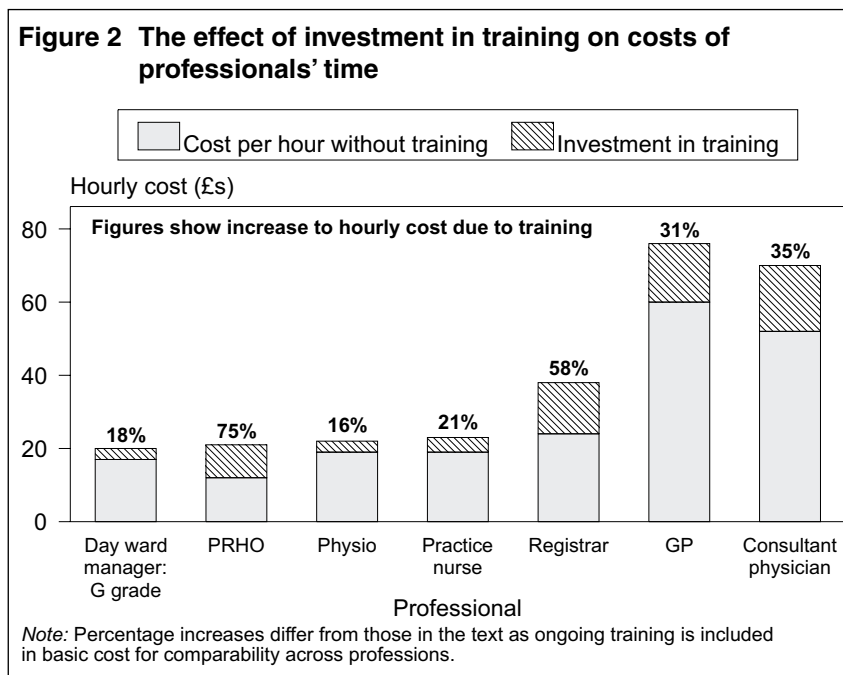
**Figure 1 Expected working lives (years)**



distribution of costs and returns on the investment (in terms of time spent working in related professional roles) over time.

In absolute terms, the equivalent annual investment costs of training ranged from £4,520 for occupational therapists, through community psychiatric nurses at £5,820, to £30,170 for consultant psychiatrists. The impact on unit costs of staff of including investment costs was examined; see figure 2. The impact was least on professions allied to medicine. The lowest impact was for occupational therapists (16 per cent). The biggest impact among these professions was for speech and language therapists where unit

**Figure 2 The effect of investment in training on costs of professionals' time**



costs are 19 per cent higher when investment costs of training are included. For all types of nurse the impact was slightly higher, with unit costs rising by over 20 per cent when investment costs are included. The most marked, and varied, impact was among doctors. Given the long-term investment required for consultants, it perhaps is not surprising that the costs including investment in training are 36 per cent higher than without this investment cost. But the most dramatic impact is on the costs of registrars. Because a high proportion of the investment required for a consultant is required for a registrar but pay is much

lower, the net effect of including investment costs is to increase unit costs by 60 per cent. If ongoing training costs are included, costs rise by 66 per cent.

For the most part these investment costs are borne by the wider NHS and individuals undertaking the training rather than trusts, so those costing exercises that are concerned with narrowly defined costs to the provider organisation would not want to incorporate these investment costs. The investment costs of education should always be included, however, when evaluating the cost-effectiveness of different approaches to using health service staff as it is important to include all the costs implicit in changing the professional mix. Evaluations of any innovative working patterns which change the way that staff are used (such as community psychiatric nurses conducting clinics that may previously have been staffed by a doctor) should also include the investment cost of training.

The approach does allow us to make a reasonable estimate of the long-term investment costs of qualifying health service professionals. Clearly the levels of investment are such that including annuitised costs is essential if appropriate conclusions are to be drawn with respect to the cost-effectiveness of changing the

patterns of use of professional expertise in the long term. The analysis also shows that the distribution of returns on investment in education has an important effect on the estimated equivalent annual cost. This has implications for the appropriate measurement of costs both when considering innovative staff use and workforce planning.

### Further information

Two volumes describing the findings and methodology of the project have been published by the PSSRU, together with a CD-Rom containing the PC compatible computer programme developed. An annual companion volume, *Unit Costs of Health and Social Care*, is also produced. Please contact the PSSRU librarian in Canterbury for ordering details.

### Key points

- The project developed an approach to estimating health service staff costs in a consistent and comprehensive way for evaluating the cost consequences of innovative uses of staff resources.
- For such purposes, training and education of staff needs to be explicitly valued, discounted and annuitised.
- A software programme has been developed which includes default values and allows users to adapt the information for a range of unit costs.
- National unit costs have been estimated for a wide variety of doctors, nurses and professions allied to medicine. Including the annual investment costs of training has an important impact on total values and they should be taken into account whenever there are long-term consequences for the composition of the workforce.

### Psychiatric Re provision in North London

The long-running evaluation of psychiatric re provision in North London conducted by the Team for the Assessment of Psychiatric Services (TAPS) completed its findings in the autumn of 1998. During the thirteen-year research programme, patients from the Friern and Claybury Hospitals were monitored as they moved to placements in the community, and were followed up one and five years after the index discharge. The primary focus of the research was the long-stay population, but a number of subsidiary studies examined other implications of the hospital closure programme.

The Centre for the Economics of Mental Health carried out a full economic evaluation in close association with the TAPS researchers, and recent findings were reported in each of the earlier editions of the *Mental Health Research Review*. A full programme of dissemination is currently in progress. Listed below are some of the most recent journal articles and book chapters.

Knapp, M.R.J., Hallam, A.J., Beecham, J.K. and Baines, B. (1999) Private, voluntary or public? Comparative cost effectiveness in community mental health care, *Policy and Politics* 27, 1, 25-42.

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## Some recent CEMH and PSSRU publications

These two pages give brief details of selected recent publications.

CEMH Working Papers and PSSRU Discussion Papers, including those cited in this *Review*, may be purchased from Clare Valentine (PSSRU librarian, 01227 827773; C.Valentine@ukc.ac.uk) or Daphne Hargreaves (CEMH, 0171 919 3198; cemh@iop.kcl.ac.uk). They can supply a full list of our mental health research publications, together with information on charges, which can also be accessed (together with electronic versions of some publications including this *Review*) through the PSSRU website: [www.ukc.ac.uk/PSSRU/](http://www.ukc.ac.uk/PSSRU/)

We aim to disseminate our findings as widely as possible, but both PSSRU and CEMH have to charge for papers. If a paper is also published as a journal article or book chapter we advise interested readers to obtain that publication from a library (through the inter-library loan system if necessary) or bookshop.

Issue 11 of the *PSSRU Bulletin*, which covers the Unit's work as a whole, is available free of charge. The PSSRU also publishes a book series under the Ashgate imprint, monographs, and newsletters.

### **Poverty, disability and the use of long-term care services**

Stephen Almond, Andrew Bebbington, Ken Judge, Roshni Mangalore and Owen O'Donnell (1999), in Royal Commission on Long Term Care, *A New Era for Older People*

### **Evaluation and the voluntary (nonprofit) sector: emerging issues**

Jeremy Kendall and Martin Knapp (1999), in David Lewis (ed.) *International Perspectives on Voluntary Action*, Earthscan, London

### **Economic evaluation and conduct disorders**

Martin Knapp (1999), in Jonathon Hill and Barbara Maughan (eds) *Conduct Disorders in Childhood*, Cambridge University Press, Cambridge

### **Needs based planning for community care: a model for older people**

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### **The cost of antisocial behaviour in younger children**

Martin Knapp, Stephen Scott and Julia Davies (1999), *Clinical Child Psychology and Psychiatry*, forthcoming

### **Assessment approaches for older people receiving social care: content and coverage**

Karen Stewart, David Challis, Iain Carpenter and Edward Dickinson (1999), *International Journal of Geriatric Psychiatry*, 14, September, 147-156

### **Estimating per unit treatment costs for mental health and substance abuse programs**

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