COSTING PSYCHIATRIC INTERVENTIONS

Jennifer Beecham and Martin Knapp

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Personal Social Services Research Unit
University of Kent at Canterbury

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Abstract The demands and needs for cost information in psychiatric contexts have multiplied considerably in recent years, but have often been frustrated by inadequate data. The typical costs data available to the policy maker, manager, clinical professional or researcher have been dominated until recently by age-old accounting practices and line management arrangements, and constrained by fragmentation of responsibility. Most limiting of all, costs data have rarely been used in taking decisions about individual cases. In considering the demands and needs for costs in psychiatry, this chapter describes a research instrument - the Client Service Receipt Inventory (CSRI) - which has been developed and extensively applied in order to meet some of these needs. The chapter includes illustrations of applications of data recorded using the CSRI.

> When we mean to build,
> We first survey the plot, then draw the model;
> And when we see the figure of the house,
> Then must we rate the cost of the erection;
> Which, if we find outweighs ability,
> What do we then but draw anew the model
> In fewer offices, or at least desist
> To build at all? (Shakespeare, *King Henry IV, Part 2*)

SCARCITY AND COSTS

It is difficult to think of a health care system, in the present day or in the past, that has not faced resource constraints. Demands and needs for health care almost always exceed available supplies. Indeed, often the pressures of scarcity have forced the complete re-drawing or abandonment of promising plans and laudable aspirations. A current example is the push to develop better community-based mental health services, where the needs-led aspirations of the 1990 NHS and Community Care Act have been compromised in some localities by severe shortages of appropriate services, giving way to supply-led service arrangements (Johnson et al., 1997).

We should not be surprised - or even perhaps particularly depressed - by this and other examples of policy or preferred practice fettered by the scarcity of resources. Any lack of surprise should not be for the cynical reason that there always seems to be a gulf between political rhetoric and actual delivery, but because scarcity is the fundamental reality. Aspiration will and should always run ahead of attainability.

Recognition that there are insufficient resources to meet expressed demands or underlying needs is the prompt to examine carefully how those resources are deployed. Almost every debate in and about Britain’s mental health care services boils down to a discussion - sometimes a heated disagreement - about resource use. In particular, can they be employed more productively (that is, with greater efficiency) or more fairly (greater equity) in one use rather than another? Almost any answer to these efficiency and equity questions will have to collect and analyse quality evidence on needs, outcomes and of course costs. This chapter focuses on the last of these elements.

Demand

Demands for cost information stem from a variety of policy, practice and research needs. Notwithstanding the well-known difficulties of defining and measuring need, it has been remarked that there have not only been increases in levels of need for mental health services, but also growing gaps between latent or assessed needs and supplies of services to meet them. Certainly the ageing of the population is increasing the numbers of people with dementia, posing major new challenges for public sector health and social care services (Knapp et al., 1998a). There is evidence of growing needs for child and adolescent mental health services (Costello et al., 1993), and the Psychiatric Morbidity Surveys of 1993/94 uncovered large residuals of unmet needs (Meltzer et al., 1995a).

Resource limitations, or economic pressures generally, can create their own vicious circles. Needs which are inadequately addressed one year because of supply constraints can return, perhaps with a crisis-like vengeance, to dog providers in subsequent years. Child and adolescent mental health problems are closely associated with psychiatric and other problems in adulthood, unless the continuities can be broken with effective early treatment (Maughan and Rutter, 1998). These growing needs and their attendant problems represent latent demands for economic information. They are the underpinning causes of scarcity, and the underlying reasons for needing to adopt soundly-based allocation criteria such as efficiency and equity.

Increasingly, these latent demands get turned into expressed demands for cost information, although the transition is by no means straightforward (Knapp, 1997). There are many such demands (see Box 1). For instance, the substantial changes to the mental health care system announced by UK ministers soon after the Labour government came to power in June 1997, many of them developed in the National Service Framework launched in 1999, clearly need wide-ranging accurate resource utilisation data to inform local and national decisions. Governments always need resource information of this kind, but no more so than during a period of rapid change, as the next few years promise to be. Similarly, the licensing of new drugs and the development of new psychosocial interventions generate demands for information not just on efficacy but on resource consequences (cost-effectiveness and cost offsets).

Box 1: Expressed demands for cost information

- to check value for money (and best value) for users and purchasers.
- to underpin and guide purchasing and providing decisions within quasi-markets, and for other 'managed care' initiatives.
- to inform, monitor and evaluate current or proposed mental health policies.
- to inform service delivery and practice, and to guide care managers operating within devolved budgets.
- to evaluate the resource implications of new treatment modalities.
- to assist the marketing of new treatments such as pharmacotherapies.
- to inform decisions by formularies, licensing authorities and reimbursement groups.
- to audit service provision and purchasing, and for accountability and probity checks.

The mental health care system in the UK is characterised by pluralism of both provision and funding. On the funding side, the National Health Service is the major funder of treatment and care services, but in fact comprises quite a large number of fairly autonomous agents, particularly primary care groups and trusts, and health authorities. There are also local authority social services departments, housing departments, and the criminal justice system all financing services. On the provider side, alongside the substantial historical presence of the public sector, there are private and voluntary providers, as well as advocacy groups and campaigning organisations. The rapid development of this 'mixed economy' of funding and provision was, of course, a major policy priority for the Conservative governments of the 1980s and 1990s, but the mixed economy is clearly not going to disappear with a Labour government. Consequently, there is an even more pressing need for transparency of information about the costs of different interventions, and the resource consequences of successful and unsuccessful treatment. These are not required simply for cost comparisons between competing providers, but represent cost needs which run throughout Britain's complex care system.

Supply

When the first edition of this book was published in 1992 there was little British evidence on the economics of mental health treatments and services. The position has changed, quite markedly in some fields, even though cost information generally remains relatively scarce. The internal market introduced by the 1990 Act obviously generated a need for cost and price data to be collated and disseminated, because priced contracts drove the quasi-market system, and the response has been quite impressive in some areas. Auditors within and outwith care-providing agencies have increasingly turned their attentions to value-for-money and, more recently, ‘best value’ criteria, and public health and social care agencies have been able to provide more such evidence. Care managers and key workers in many localities have been instructed to work within pre-set budgets and have been given costs and other data to assist their decision-making. Research-funding bodies have also responded with the explicit recommendation that health services research projects should look not only at outcomes for users but also at the costs for providers and the wider society, with the result that many more study teams include a health economist.

How then is cost information to be gathered? This chapter focuses on a research tool (the Client Service Receipt Inventory) which has been developed and successfully employed in the collection of information on costs, service utilisation, income and related matters. We describe this schedule, illustrating its flexibility for use in many mental health service and evaluation contexts. Collecting such data is the first of three linked tasks so the next section continues by broadly outlining our methodology for estimating service costs and for calculating the costs of the full care packages recorded on the CSRI.

In the third part of this chapter, we illustrate the use of the CSRI from some of our own research. Like the plans for the new health and social care systems set in place in the early 1990s, and reinforced by the Labour government in more recent policy pronouncements, the aim of this research tool and its accompanying methodology has been to generate costs data which are client-focussed rather than agency-centred, comprehensive rather than partial, consolidated rather than fragmented, and constructively employed in the improvement of efficiency and equity rather than merely employed to monitor proberty. In this section, we use data generated by the CSRI to outline the service and cost implications of psychiatric hospital reprovision, look at cost-need associations and explore issues of the relative cost-effectiveness of community-based arrangements.

A COSTING METHODOLOGY FOR RESEARCH IN PSYCHIATRY

The basic cost rules

We first recommended four general costing ‘rules’ for psychiatric research ten years ago (Knapp and Beecham, 1990). The first rule recommends that costs should be comprehensively measured. They should therefore range over as many service components of care programmes or ‘packages’ as is relevant in any particular circumstance.

> Unless costs are defined and measured comprehensively, one treatment mode may appear to be less costly than another when in reality that mode merely shifts costs into forms that have not been measured (Weisbrod et al., 1980, p.403).

The calculation of comprehensive costs is most usefully effected at the individual level, partly because this is the level at which clinical data are collected, and partly because this preserves inter-client variability in the research domain - an essential feature of any needs-based service system. The second costing rule then urges that these variations between clients should not be overlooked, nor the likely variations between facilities or areas of the country. Analysed properly, these cost variations can produce useful policy and practice insights, for costs will usually be linked to differences in individual characteristics and needs and outcomes.

An examination of cost differences encourages conclusions to be drawn about comparative performance. The third rule should then come into play: such comparisons must be made on a like-with-like basis. It is of little value, for example, to report that community care costs less than hospital care if clients in the community have fewer behavioural or health problems than those in hospital. Finally, cost information is far more useful if it does not stand in isolation from other relevant evidence, particularly outcome data. Reliance on cost information alone could be dangerous, just as it is inadvisable to *neglect* costs in policy and practice discussions and decisions. In a radical review of community care which had a major influence on the 1990 health and community care legislation, Griffiths wrote,

> To talk of policy in matters of care except in the context of available resources and timescales for action owes more to theology than to the purposeful delivery of a caring service (Griffiths, 1988, para.9).

For example, underpinning most evaluations is the hoary old question: for whom and under what circumstances is one intervention preferable to another? But to define the criterion ‘preferable’ solely in clinical outcome terms without regard to cost is to invite unnecessary (that is, avoidable) difficulties of implementation.

These cost rules embody two sets of principles: they are consistent with the demands of economic theory as applied to health and social care (Drummond, 1997; Knapp, 1984; Knapp, 1995), and they are also essentially the costing counterparts to the usual principles of any evaluation. This congruence and the economic theoretical grounding help considerably in the design and interpretation of empirical research. With these four rules tucked under one arm we will describe the instrumentation developed for collecting service utilisation data and calculating comprehensive support costs. Although the potential undoubtedly exists within care management or care programme frameworks, it is not yet possible to ask any one person about the full cost implications of a client’s care package. The process of calculating the full costs of supporting individual, therefore, is broken down into three connected tasks described below:

- the collection of service receipt or utilisation data for individual clients or patients over a consistently defined period;
- the costing or pricing of each service used; and
- the combination of these two sets of information in order to calculate the cost of the full care packages.

Each of these tasks is described in general terms below, illustrating the approach in a variety of applications although focusing primarily on an economic evaluation of psychiatric reprovision with which we have been associated.

Collecting service utilisation data - the CSRI schedule

In order to calculate the costs of community care for people moving from long-stay hospital residence, we developed and employed a new instrument in 1986, the Client Service Receipt Inventory or CSRI. The CSRI built on previous research at the PSSRU, particularly on child care and young offender services (see Knapp and Robertson, 1989, for a partial review), and incorporated relevant parts of previously developed instruments in the mental health field, particularly the Economic Questionnaire of Weisbrod et al. (1980). Although the instrument needed to be tailor-made to fit the research context, an early requirement and one that has proved invaluable in subsequent research, was easy adaptability. At the time, the CSRI was to be employed in the PSSRU's evaluation of the Department of Health's Care in the Community demonstration programme of 1984-89, which concerned all the main adult client groups, and also in the evaluation of the psychiatric reprovision services being established under the closure programmes for Friern and Claybury hospitals in North London.

In both evaluations we could be certain that most clients would have a key carer or case manager, or would be living in a group home where a diary would be kept of residents' activities (especially contacts with health, social care and related services, and with peripatetic professionals). The questionnaire was therefore originally designed for administration by an interviewer from the research team to the principal carer of the person with mental health problems. For about ten per cent of the clients, the key carer could not be identified, perhaps when someone was living independently in domestic accommodation. In these situations, the schedule was successfully completed in an interview with the client. It was also completed during telephone interviews and by staff with no interviewer present, even though not specifically designed for that mode of use. In some research projects the key questions of the CSRI have been incorporated into other schedules. However, experience has confirmed our initial expectations that a trained interviewer can best tease out accurate and comprehensive information.

The CSRI was piloted in the summer of 1987 in the Maidstone Care in the Community project for people with learning difficulties where a wide range of services had been developed, affording the chance to test the instrument under different conditions. A second round of instrument refinement was based on use of the CSRI in another three Care in the Community projects. Since its introduction the CSRI has been used in many evaluation studies, and some of the service contexts are listed in Box 2.

Box 2: A selection of evaluation contexts in which the CSRI has been used

- a long-term evaluation of an assertive outreach service, the Daily Living Programme (Knapp et al., 1994; Knapp et al., 1998b).
- a study of people with schizophrenia living in the community in two London districts (Beecham et al., 1995).
- the evaluation of psychiatric and mental handicap hospital rundown and community care developments (Knapp et al., 1992; Donnelly et al., 1994; Beecham et al., 1997; Cambridge et al., 1994).
- a comparison of an experimental case-management oriented community psychiatric nursing service with a more traditional model (McCrone et al., 1991).
- a evaluation of a new intervention to improve compliance with medication (Healey et al., 1998).
- evaluations of children's mental health and social care (Beecham and Knapp, 1995; Knapp et al., 1998c).
- studies of community care for older people (Beecham et al., 1993; Petch et al., 1996).
- studies of care for people with challenging behaviour (Felce et al., 1998).
- evaluations of new drugs (Drummond et al., 1998).
- an evaluation of specialist work schemes (Schneider and Hallam, 1997; Hallam and Schneider, 1999).

The questionnaire is usually printed on six A4 pages and takes approximately twenty minutes to complete. Both factors, however, will vary depending on the clients' situation, the research focus, the scope of costs and the extent to which required data are recorded on other schedules used in the study. CSRI questions are largely structured but, given the complexity of community care arrangements, a few narrative answers are required. The questionnaire design intentionally incorporates blank spaces to write additional comments or interpret the occasionally confused responses of the interviewee. A series of 'prompt cards' can supplement the CSRI. These may contain indicative lists of accommodation types, different services and social security benefits. For a local evaluation they may contain lists of named services.

The CSRI collects retrospective information on service utilisation, service-related issues and income in a manner commensurate with estimating care package costs. The retrospective period (prior to the date of the interview) is a compromise between the accuracy that comes from not asking respondents to cast their minds back too far and the comprehensiveness which can only come by allowing sufficient time to elapse for some uncommon but potentially expensive services to be used. In the hospital rundown evaluations we divided the service utilisation section (see below) into two parts, one covering the previous month - in the North London reprovision study this was the twelfth month after discharge from hospital - and the other asking about less regularly received services (such as hospital admissions or GP visits) over the past twelve months. These durations are not fixed, and can be varied to fit particular research designs. For example, repeated use of the CSRI - as in the first phase of the Daily Living Programme evaluation, when interviews were conducted at 4, 11, and 20 months after entry to the study – allows data to be recorded only for the period between interviews. For this longitudinal study, information gathered at all interviews was recorded on the same schedule which meant the interviewer could use data from the previous interview to prompt or guide questions.

The first section of the CSRI covers *background and client information*, for example recording client study number, gender and date of birth. Depending on the availability of information from other instruments, the interviewer could then ask for details of past admissions and discharges from hospital, participation in a special programme, registration with a GP and medication. This opening section also records the date and place of interview and identifies the interviewer. A useful development of the CSRI has been to incorporate questions on other sociodemographic indicators such as educational attainment or ethnicity (CSSRI; Chisholm et al., 1999).

The second section concentrates on describing the study members' *accommodation and living situation*. Accommodation is usually a major component in terms of its contribution to clients' support arrangements and the associated cost. The CSRI records information on: address, partly for the purposes of identifying facility type and budget, and partly because location influences cost (London is more expensive than the rest of the country, for example) and some adjustment may be needed; tenure of accommodation (council or private rent, residential home, owner occupier); a simple description of the size of the unit (the number of rooms and the number of other residents); the amount paid by the client or household in rent or other payments; and receipt of housing benefit, if any.

Many clients with severe mental health problems do not live in domestic accommodation but in specialised facilities such as residential or nursing homes, hostels or group homes. We can impose a standardised categorisation of facilities using information recorded on the CSRI about residents' tenure, facility size, staffing arrangements and managing agency (NHS, local authority, voluntary or for-profit organisations). Where several clients live in the same facility, some of these questions need be completed only once. In our evaluation of domus care, these overarching questions were separated from the main questionnaire (Beecham et al., 1993).

Unfortunately, many people with mental health problems (though generally not the former long-stay in-patients moving to planned community care schemes) quite frequently move from one address to another (Slade et al., 1999), and the CSRI can record such changes of address, including hospital re-admissions. Instability of accommodation obviously complicates cost calculation but for clients it can have dire consequences for ability to work, entitlements to social security or indeed mental health itself. In some applications of the CSRI, where study members are more likely to live in domestic accommodation, this section has been more comprehensive, asking about the composition of the household and whether the clients themselves have any care responsibilities. More attention is also paid to how household expenses are covered.

Research has shown that concerns about money can have an adverse effect on some mental health conditions (Brugha et al., 1985; Granzini et al., 1990). Many people with mental health problems have low incomes, due in part to the heavy reliance on social security benefits and also to problems associated with under-claiming of benefits, low wages if work is found and unstable work patterns (Melzer et al., 1995b). Information on *employment history, earnings and other personal resources* is therefore collected. Former long-stay hospital residents rarely find (open) employment, but for many other groups of people with mental health problems, employment and its loss are important facets of both service effectiveness and cost. More questions therefore may be needed on employment history, and a number of questions may be needed on current employment activities. The costs of lost employment resulting from mental ill health or in-patient treatment will fall to clients (lower income) and to society (lost productivity), the actual values to be attached depending on a variety of labour market and individual circumstances.

If employment-related costs are unlikely to be an issue it is more important to clarify receipt of social security benefits. In strict economic terms these should be considered as transfer payments, which do not represent an aggregate cost to society, but they are also good proxies for living expenses, since clients usually rely on these benefits as their main (often only) source of income. Data on *changes* in benefit status over the past year may also be important as they will reflect changes in clients’ accommodation or other circumstances, or changes to the entitlement regulations.

The *service receipt* section is at the core of the CSRI, and can take up most of the interview time. Community care is delivered and received within a fragmented 'system' in which many agencies and organisations provide a variety of services. There is certainly no standard package of care handed out as people are referred to psychiatric care and so there will be a deal of variation between clients' packages of care. In this section the schedule identifies receipt of services which are not funded within the accommodation budget; either health or social care services available to everybody or specialist mental health services. Information is collected on services which the client leaves the accommodation facility to attend, such as day activity centres, hospital-based services, appointments at the GP surgery or leisure activities. Some professional support or services are provided to the client at home; home help, community psychiatric nurse or field social worker visits are examples. For most research purposes, the CSRI provides a list of the different service types, such as local authority day care or outpatient appointment, which forms the left-hand column of a table. For each service type, the number of contacts over the chosen retrospective period is requested and the average duration of these contacts. In the final column, in which 'not-applicable' cells are shaded, the interviewer can record whether the contacts are normally made at a clinic or office or at the client's home. For domiciliary services it is also important to identify whether the professional sees several clients for a group session (as with occupational therapy) or sees them sequentially (as with GP visits). The allocation of service costs to individuals must take the scope of the visit into account.

For services which are likely to absorb a high proportion of care package costs, we advocate collecting more detail. For example, the length of each inpatient admission should be accurately recorded alongside information on the type of hospital and/or ward. (Intensive psychiatric care units have been found to cost nearly three times as much per day as long-stay hospital wards; Netten et al., 1998.) Special consideration should also be given to recording relevant details of a new intervention and its comparator.

The final section of the CSRI considers the role of informal carers. The availability of such support for people leaving long-stay psychiatric hospitals appears to be limited (Knapp et al., 1992) but if a number of study members are known to be living independently or with other members of their families, more weight would need to be given to this dimension. The CSRI includes questions on the input of informal carers in terms of time spent (frequency and duration of support) and tasks undertaken (personal care, shopping, domestic tasks, social visits). Financial costs borne by family and friends can also be recorded and may include extra food or heating, increased replacement of clothes and equipment as well as cash gifts. Family members may receive extra income as a consequence of their relative's problems, such as attendance allowance.

These five sections form the framework for the *Client Service Receipt Inventory* within which responses to questions are carefully structured to facilitate cost estimation. It is the emphasis put on different aspects of each section that provides the instrument's flexibility and its adaptability to different research and service contexts. Each CSRI summarises one person's care package (see Boxes 3 and 4), the components of which we would expect to vary given that any individual study member has a different set of characteristics and needs (broadly defined). By aggregating the service receipt across sample members a list of all services used can be compiled. A unit cost should be estimated for each of these services.

Estimating unit costs for health and social care services

The second major task in measuring the costs of support for people with mental health problems is the costing or pricing of the various services used by clients. Economic theory advocates basing cost measures on *long-run marginal opportunity cost*. In practice, by *long-run* we mean to move beyond the small scale and immediate development of community care (say) which could probably be achieved by using present services more intensively at very low marginal cost. Since national policy intentions are to develop community services, it would hardly be credible to measure only short-run cost implications. By *marginal* we mean the addition to total cost attributable to the inclusion of one more client (the production of the marginal unit of output in general economic parlance). By *opportunity cost* we mean that the resource implications should reflect opportunities forgone rather than amounts spent. The opportunity cost measures the true private or social value of a resource or service, based on its value in the best alternative use. In a perfectly informed and frictionless market economy, this 'best alternative use value' would be identical to the price paid in the market. Not everything is marketed, not every market works smoothly, and information is rarely complete, with the result that observed prices and opportunity costs diverge. The recorded depreciation payments on capital equipment or buildings for example, will not usually reflect the opportunity costs of using these durable resources, nor will the (zero) payments to volunteers and informal carers usually indicate their social value.

In application of these principles, it happens that today's (short run) average revenue cost, plus appropriate capital and overhead elements, is probably close to the long-run marginal cost for most services we would encounter. In this chapter we will say no more about the calculation of these average revenue costs or their capital add-ons, for once we open the description we will need more space than can presently be made available. Moreover, the details are not everyone's cup of tea. We have written about them elsewhere, briefly (Knapp and Beecham, 1990), in more detail in relation to mental health care (Beecham, 1995), and in much greater depth with various health and social care examples (Netten and Beecham, 1993). An annual compendium is also available which pulls together a number of research and other sources to present nationally-applicable unit costs for over 70 health and social care services (Netten et al., 1998).

In the psychiatric reprovision study two main procedures were used to cost or price each service. Accommodation facilities, hospital and day care services were expected to account for a large proportion of the total cost of care packages and their unit costs were carefully and individually calculated by adjusting published or routinely collected facility accounts. Particular attention was paid to services at Friern and Claybury Hospitals, the costs of which would be required as comparators for community care costs. The planned level of detail to be obtained, and therefore the accuracy of the pricing, was lower where the service was likely to contribute less to total cost, such as input from field social workers, nurses, psychiatrists, or chiropodists. For these services, national statistics or data from other studies were used to build up our unit costs. In all cases prices were calculated to approximate the long-run marginal costs of care, including the opportunity costs of all capital employed.

Costing full care packages

The Client Service Receipt Inventory is a means to an end rather than an end in itself. The interview collects the data that enable packages of care to be identified. This information must then be manipulated and joined with information on the costs of those services. This data preparation stage allows service receipt to be allocated at a constant unit over a defined period of time. The unit of measurement for service receipt (per hour, say) should be the same as that used for the calculation of service costs. The period of time is often defined by the research: for the North London reprovision study the follow-up period was one year after discharge from hospital, for the Care in the Community programme evaluation the follow-up was 9 months; and for the Daily Living Programme several follow-up periods were used, varying from 4 to 9 months.

Box 3: Psychiatric reprovision package, independent living

Mr A. is 39 years old, lives alone in a housing association rented flat and has no informal care support. He has gastro-intestinal problems which require monitoring by his GP. He also takes medication (without supervision) for dermatological problems. He presents no behaviour problems.

Services received	**Average weekly cost**	**Description**
Social work	£15.45	Social worker and link worker visit once every two weeks for 30 minutes.
GP	£1.50	Ten surgery appointments during the past year.
Chiropodist	£0.36	Two visits during the past year.
Hospital outpatients	£14.79	One appointment each month for a check-up and depot injections.
Housing officer	£5.41	Visits once every two weeks for 15 minutes.
Accommodation	£109.41	Includes local taxes forgone by the local authority, and capital, management and maintenance costs borne by the housing association.
Living expenses	£102.27	Income support, invalidity benefit and disability allowances.
Total weekly cost of care package, 1997/98 prices	**£249.19**	

Source: Hallam (1998)

Boxes 3 and 4 provide two illustrative case studies, taken from the economic evaluation of psychiatric reprovision in North London. For each person, we describe the components of their care packages, that is, the frequency and duration of contact with any services over the year prior to interview. The average weekly costs is listed for each component, estimated using the approach outlined above, and the total weekly cost of the care package calculated. In the next section, we consider some of the ways these cost-related data can be used to address policy and practice issues.

Box 4: Psychiatric reprovision package, assessment centre

Mr B. is 51 and lives with seven other residents in an assessment centre managed by the community health services trust. He needs daily medical care for respiratory problems. Mr B. becomes verbally aggressive at least once a month and has episodes of extreme agitation, during which he becomes doubly incontinent. He is able to concentrate for short periods only, has poor hygiene habits and tends to be socially isolated. A heavy smoker, he is considered a health risk and has twice been responsible for causing a fire.

Services received	**Average weekly cost**	**Description**
Social work	£0.95	Social worker has visited twice during the past year for one hour each time.
Depot injection	£5.37	Cost of the drug given by in-house staff.
Chiropodist	£1.42	Visits once a month seeing four residents on each occasion.
Dentist	£0.15	One check up during the past year.
Optician	£0.23	One visit to optician for sight test in past year, glasses were not prescribed.
Day centre	£3.54	Drops in for approximately one hour per week
Accommodation	£1,225.59	Includes care, hotel and building-related costs of the residential facility.
Living expenses	£29.99	Personal expenses and bus pass.
Total weekly cost of care package, 1997/98 prices	**£1,267.24**	

Source: Hallam (1998)

ILLUSTRATIONS OF COSTS RESEARCH

We can illustrate the employment of the resultant economic data by considering some results from the long-running economic evaluation of psychiatric reprovision in North London. In debates about the rundown of long-stay hospital provision and its replacement by community care, doubts about economic viability are rarely far from the surface. In this chapter we address three questions. What are the service and cost consequences of moving long-stay patients from the hospital to be supported by community-based services? Can we predict subsequent community costs from information gathered on patients in hospital? Of the many variants of community care, which are the more costly, and which the more cost-effective?

The decision to close two of the largest psychiatric hospitals in North London was taken in 1983, since which date the Regional Health Authority and the Department of Health have funded research to examine the psychiatric reprovision services being established to replace them. In association with the Team for Assessment of Psychiatric Services (TAPS), researchers from the PSSRU at the University of Kent and the London School of Economics and more recently the Centre for the Economics of Mental Health at the Institute of Psychiatry, have been studying the economics of reprovision (Beecham et al., 1997; Knapp et al., 1997). The main focus of the economic evaluation has been on in-patients who have been in continuous residence for at least a year, and who, if over 65 years old, do not have a current diagnosis of dementia. In this chapter, we concentrate on people who left hospital and for whom follow-up data were collected one year after discharge. (Many former hospital residents have also been assessed five years after discharge.) The first reprovision patients moved to the community in 1985.

Describing community care services and costs

By March 1993, when Friern Hospital was closed, a total of 813 people who met the study criteria had left the two hospitals under the rundown plans, most under the reprovision arrangements which carried financial transfers. Baseline information for all patients in the hospitals was collected by the TAPS researchers covering: mental health status, using the Present State Examination (PSE) and the Social Behaviour Schedule (SBS); physical health; personal and historical data; patient attitudes; living skills using the Basic Everyday Living Skills schedule; information on patients' social networks using the Social Network Schedule; and an assessment of living environments. Altogether, including the 'new long-stay' patients who had accumulated in the two hospitals since the study began, baseline information has been assembled on nearly 1,000 in-patients. The TAPS research design compares aspects of the quality of life for patients discharged from the two hospitals with similar patients who remained behind, but also assesses change before and after discharge from hospital (Leff, 1997; Leff et al., 1996a; Leff et al., 1996b).

Detailed service utilisation data formed the basis of our cost estimates for 533 people leaving the two hospitals, and community care costs were more broadly estimated for a further 218 people. The remaining 8 per cent of the full sample of leavers died before the interview date, could not be traced or moved out of the region. For 533 people for whom data were collected on the CSRI, community service use and the associated costs are summarised in Table 1. These data aggregate the care packages (see examples at Boxes 3 and 4) for each study member in the sample. The figures illustrate the variety of services used by psychiatric reprovision clients, spanning specialist mental health provision, secondary and primary health care services as well as social care services provided by public sector agencies (local authority social services departments) and independent sector organisations. The low level of contact with police or probation services is noteworthy – former long-stay patients rarely cause high support burdens to the criminal justice system.

The final two columns of Table 1 show the relative contribution to total costs for each service. Accommodation placements obviously dominate as most study members live in high support residential homes or staffed group homes. Hospital-based services also continue to play a major role. In-patient services are used by only 15 per cent of sample members but absorb 16 per cent of the costs of support for those who were re-admitted. Day support services, whether provided within or outside the hospital are also an important source of support, together accounting for just over 6 per cent of the total costs of support for all clients (final column). In contrast to these quite expensive services, some are used by a much higher proportion of clients but make a smaller contribution to total cost; community psychiatry services, chiropody, and the general practitioner are examples.

This type of descriptive information begins to reveal where the cost burdens lie. Which services must expand to support former long-stay hospital patients as they move to community-based care? If in hospital all these services (or functions) were provided from within the hospital budget, who now funds these components? These are issues about the distribution of resources in community mental health care provision which can only be addressed by taking a comprehensive approach.

Associations between costs, client characteristics and needs

The average cost of community care for our sample of 751 former long-stay hospital residents was £690 per week (1997-98 prices) yet the most expensive care package was at least 20 times more costly than the cheapest. Why do care package costs vary?

We would expect a primary source of this variation to be client needs or problems. For example, do people with greater needs or problems get more support? We use the term *problem* to describe those psycho-social characteristics of clients on which psychiatric and associated support services are expected to have an impact. If costs summarise, albeit imperfectly, the resources expended or services delivered to clients, how well are services tailored to address these problems? Using a cost function approach, ordinary least squares regression was employed to explore the causal links between cost and its hypothesised determinants. We summarise the findings here and the methodology, and full results and implications are considered at greater length in other papers (Knapp, 1998; Knapp et al., 1995). The estimated cost functions indicated that community care costs are sensitive to differences in a number of client characteristics as assessed in hospital, explaining 21 per cent of the variation in the total weekly costs of support. Demographic characteristics exert only a limited influence on costs; neither age nor gender prove to be significant but costs are higher for people who never married. Three of the reasons for original admission to hospital (transfer from another psychiatric facility, inability to cope and admission to hospital under the Mental Health Act) are associated with the much later community reprovision costs, but their effects are not easy to interpret and the data may have referred to circumstances prevailing many years earlier. Easier to understand perhaps, is the effect of people's history of hospital care. A greater proportion of life spent in hospital and a greater number of previous admissions to hospital increased the costs of support packages in the community, suggesting that prolonged institutionalisation increases the need for community support services.

The influences of the clinical factors on cost are particularly interesting. People with more negative symptoms (a measure constructed from the Present State Examination scores) have higher than average costs. Higher scores on the Social Behaviour Schedule reflect higher staff-reported ratings of abnormal behaviours and, with one exception, imply higher costs. The negative effect of attention-seeking behaviour could be indicative of a therapeutic response, or may be related to social network size and gregarious behaviour. Two indicators of physical health needs (number of areas in which daily nursing care is required and taking medication for physical illness) are both associated with higher costs. Diagnosis had no obvious effect on cost once the above factors had been taken into account.

A third set of analyses on the reprovision study data explored whether particular variants of community care for former long-stay in-patients were more costly, or more cost-effective. Exploring intersectoral cost differences has particular policy relevance today. Are public sector services more costly or less efficient than non-public? Does the high cost of care in health authority facilities, in contrast to facilities run by other organisations, reflect the creation of environments which encourage client dependency, or at least not encourage independence? Or, alternatively, is high cost the logical corollary of the tendency for health authority facilities to accommodate those former residents with greater needs? To address these questions analyses were undertaken on data for the 429 former inpatients who were living in specialised accommodation; that is, residential or nursing homes, hostels, staffed group homes or sheltered housing which were distinguished using standardised definitions. Sectoral responsibility for individuals was defined as that which managed the accommodation facility: NHS, local authority social services department, voluntary (non-profit) organisation, private (for profit) organisation or individual, or consortium arrangements (usually health and voluntary sector organisations working together). Costs were found to be lowest in the private sector and highest in the NHS and consortium sectors. However, quality of care indicators suggested that the lowest cost sector is performing least well, and higher cost sectors offer better quality (Knapp et al., 1999).

CONCLUSION

The types of analyses described above begin to address some fundamental issues of efficiency and equity on the allocation of mental health care resources. Who gets what services at what cost? Can scarce mental health resources be better employed in one way than another? Alongside data on clients' needs and characteristics, finding the answers to these questions relies on good quality costs data. Sensible expectations of any service are that it will respond to the needs of each user and seek to improve their welfare (broadly defined) or at the least, prevent further deterioration in, say, symptoms. It is also sensible, therefore, to assess the resource inputs (costs) at a similar level giving research the capacity to evaluate together the costs and the effectiveness of a service.

In this chapter, we suggest that costs summarise the end product of decisions to commit resources in a particular way; the provision of services and other support. At the client or individual level, such decisions result in the provision of a 'care package', or a set of services which each client uses. Just as mental illness has consequences for the individual in many areas of their life, so too will their care package span many types of different support services. These services often involve several provider agencies and organisations but management information systems are not yet sufficiently developed to capture a full picture of all the components of the care package. To carry out our research therefore, we developed a specific instrument for collecting costs-related data for people with mental health problems, the *Client Service Receipt Inventory*.

Since its first use in 1986, the Client Service Receipt Inventory has developed and been modified as the demands for cost information have both increased and broadened in scope. One research-based issue has been to consider whether a shortcut could be found for the CSRI and its attendant methodologies. This would make cost estimation a less daunting and less time-consuming research task and therefore increase the frequency with which cost and cost-effectiveness studies are undertaken. Our re-analysis of five large research databases allowed us to identify the services that contributed most to the total costs of supporting people with mental health problems. Accommodation and living expenses, inpatient hospital stays, NHS and local authority day services, and outpatient appointments were found to account for between 90 and 98 per cent of total costs (Knapp and Beecham, 1993). This 'reduced list' methodology was implemented in a study of residential care services in eight health districts (Chisholm et al., 1997). Building on our work of the 1980s, the CSRI has been adapted to evaluate a variety of service contexts and a wider range of adult and child client groups and there has also been considerable international interest. Adapting the CSRI for use in cross-national studies has involved careful translation as well as work to standardise service definitions across different care systems (Drummond et al., 1998; Chisholm et al., 1999). Local versions for evaluating mental health care in Italy and Spain have been developed (Amaddeo et al., 1996; Vásquez-Barquero et al., 1997) and work is currently underway to adapt the CSRI for use alongside a case register (Amaddeo et al., 1997) and for use in clinical practice.

In 1980, in the Foreword to Drummond (1980), Alan Williams suggested that:

> One cannot but help sympathise with clinicians and other health service professionals who feel that with so many pressures upon them they might at least be spared the distasteful task of having to think about efficiency, and the husbanding of scarce resources, on top of all their other problems (p. vii).

Two decades later, the pressure to economise has increased markedly. The cost-effectiveness imperative is stronger than ever. The demands for cost information have grown, and requirements for cost information now permeate all levels of decision-making and serve to emphasise the changed context within which mental health services are planned, delivered and received. The supply of (decent) cost information has not kept pace with the demands which terminological and practical changes have created but methodologies have been developed and banks of data and experience are being constructed to bolster the supply response and to aid cost-sensitive decision-making. There will never be answers to each and every cost question but the distance between what is demanded and what can be supplied appears to be narrowing.