Utilisation and costs of community mental health services

PRiSM Psychosis Study 5

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Background The costs and the effectiveness of mental health services need to be evaluated if provision is to be efficient. Service use and costs are described for two geographical areas in south London.

Method Service use was measured comprehensively for clients in both sectors for two six-month time periods using the Client Service Receipt Interview. This information was combined with unit costs to calculate service costs. The 'hidden' costs of informal care and unsupported accommodation were also calculated.

Results At baseline significantly more intensive sector clients had in-patient stays but by the follow-up this difference had disappeared. There was significantly more use of supported accommodation in the intensive sector during both time periods. Baseline and follow-up total service costs were significantly higher for the intensive sector. Costs were spread disproportionately and a small number of services accounted for a large proportion of cost.

Conclusions While the cost at Time 2 was significantly greater in the intensive sector, this was largely due to the high use of supported accommodation. There was some convergence in cost between the sectors over time.

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A widespread feature of mental health services in Europe and North America has been to provide care for people in defined geographical catchment areas, often served by specific psychiatric teams (Thornicroft *et al*, 1995). However, service utilisation and costs of sectorised care in routine settings have seldom been measured. Studies in the Netherlands (Giel & ten Horn, 1982; Sytema *et al*, 1989), Italy (Tansella *et al*, 1986; Sytema *et al*, 1989), Norway (Lavik, 1983), Germany (ten Horn *et al*, 1988), and a multi-site Scandinavian study (Saarento *et al*, 1995, 1996*a*,*b*) have focused on the inputs from psychiatric services, usually provided from hospital sites. These studies are important because extensive data are available, covering clients in contact over a long period of time. However, there are also limitations. First, if service use is not related to cost information, there is little scope for assessing cost-effectiveness. Second, by focusing on core mental health services such studies ignore the much wider range of health and other services which are frequently used. Cost has the advantage of being a single measure of resource utilisation (Hansson & Sandlund, 1992). A recent study from Germany (Salize & Rossler, 1996) has costed services used by 66 people with schizophrenia living in the community. The evaluation was limited to core services, but there was an examination of factors which could predict cost. Economic evaluation of mental health services is vital if scarce resources are to be used effectively and efficiently. Service utilisation and cost measurement have been reported in a number of studies examining specific programmes within mental health care, for example hospital reprovision (Knapp *et al*, 1990), community alternatives to hospital admission (Knapp *et al*, 1994), and nurse case management teams (McCrone *et al*, 1994). The present study presents service utilisation and cost information for an epidemiologically representative sample of people with psychotic disorders in two defined geographical sectors in south London at two points in time: first, when the core services were provided from a hospital site, and second, after sectorised community mental health teams had been developed. The present study also compares two types of community mental health services: intensive home-based and standard home-based teams.

METHOD

The study took place in the then Camberwell health district in south London. This area was the seventh most deprived health district out of 195 in the UK, according to a 1991-census-adjusted Jarman score of 42.8 (Jarman scores (Jarman, 1983) represent the level of area deprivation, and are based on data collected from the UK census). Population and socio-demographic characteristics in the area predict comparatively high prevalence rates of mental disorder (Wing, 1989). Two of the five geographical sectors (drawn up in 1991) which make up the area were used in the study (Nunhead and Norwood, combined 1991 population 82 722) and they constitute approximately 40% of the catchment area served by the Bethlem and Maudsley National Health Service Trust.

Prior to sectorisation mental health care was largely delivered at the Maudsley and King's College Hospital sites. The main aim of sectorisation was to shift this locus of care to community settings. Community mental health teams were established within the sectors to provide more localised services. In Nunhead (the intensive sector) two mental health teams were developed. One of these teams focused on acute care while the other provided continuing care and rehabilitation. Norwood (the standard sector) also implemented community-based care but in a less intensive way. A more detailed account of the services and the way they have changed is given by Becker *et al* (1998, paper 2 in this series). Patients were identified and included for this study, and selected for interview according to the methodology described by Thornicroft *et al* (1998, paper 1 in this series).

Service identification

The study aimed to identify and measure all relevant services which constitute a

'package' of community care for reach person with psychosis. Many of these were specific mental health services. Others were used by mental health service users but also by members of the general population. Services were allocated to the categories listed below.

(a) Psychiatric services: in-patient episode, emergency clinic attendance, out-patient appointment, other contact with psychiatrist, day-hospital attendance, health funded day centre, psychologist, community psychiatric nurse (CPN; including case manager/keyworker), occupational therapist, sheltered work, and medication.

(b) General health services: general hospital in-patient bed, out-patient appointment, day patient contact, accident and emergency department, physiotherapy, dentist, optician, chiropodist, smokers' clinic, anxiety management, and family planning advice.

(c) General practitioner (GP): surgery appointment and domiciliary visit.

(d) Accommodation: supported accommodation and non-supported accommodation, including daily living expenses.

(e) Legal services: police contacts (including overnight stays in police cells), court attendance, prison, probation officer, appointment with solicitor, and mental health review tribunal.

(f) Social worker: domiciliary visits and contacts at a service base.

(g) Social services: child protection officer, home help, and meals-on-wheels.

(h) Day care (non-health provided): attendance at a sheltered workshop, day centre or 'drop-in' facility.

(i) Employment services: job centre and job club.

(j) Education services: adult education class.

(k) Additional services: business training club, counsellor, social security officer, Member of Parliament, and welfare benefits advisor.

Service utilisation was assessed, from direct client interviews, using the Client Service Receipt Interview (CSRI; Beecham & Knapp, 1992), which has been widely used elsewhere (Knapp *et al*, 1990, 1994; McCrone *et al*, 1994). The hospital computerised patient administration system supplied additional information which was used for the costing process (dates of stays in hospital and out-patient appointments). A period of six months was chosen over which to measure service utilisation, as this allowed for a wide range of service contacts to be quantified by client self-report.

Information regarding medication was usually only recorded on the CSRI when the client visited a depot clinic. This was therefore supplemented by the Camberwell Assessment of Need (see Leese *et al*, 1998, paper 8 this issue) which recorded a particular item with a specific score if treatment for psychotic symptoms was received. It was assumed that this treatment was medication, and that a depot injection was given every two weeks. Information was taken from the user and staff versions of the Camberwell Assessment of Need except for the intensive sector clients at Time 1 when only the user version was available. Figures were available from the hospital pharmacy department for patients using clozapine.

Service cost measurement

Knapp & Beecham (1990) have proposed four rules of economic evaluation. First, costs should be measured comprehensively. If all services that are relevant to a package of community care are included, then we can observe the broad effect of any policy changes. In the PRiSM Psychosis Study, for example, a move away from a hospital-oriented service might have an impact on the uptake of services provided by social service departments. Second, only like-with-like comparisons have full validity. Here we examine two modes of service delivery which provide care for people with severe mental health problems. Third, cost variations should be explored as it is likely that there will be a wide spread of costs. Factors that determine this variation need to be identified. Finally, costs and outcomes should both be examined. A focus purely on cost does not tell us how efficient the service is; rather we should be concerned with how much 'output' (for example, a change in quality of life or social functioning) is being achieved for an 'input' (measured by service costs) of resources. The present paper is concerned with service utilisation and costs; the way in which costs vary and how they and service utilisation are associated with outcome will be explored in future work.

'Long-run marginal opportunity costs' should be applied when examining resource implications of service use. This allows us to gauge the long-term impact of resource allocation, and costs should be defined in terms of opportunities foregone. Revenue costs in the short run, with the addition of capital costs and other overheads, can serve as reasonable proxies of long-run marginal opportunity costs.

To calculate the overall cost of a particular service the total service contact time (number of contacts multiplied by the average duration of contact) was multiplied by the unit cost for that service. The unit cost for generic services was calculated from salaries, employer additions, travel expenses, and overheads. Many of these had previously been calculated as national unit costs (Netten, 1994). The same unit costs for generic services were used for both sectors. The advantage of doing this is that it allows the results to be more generalised. A disadvantage is that there may have been particular aspects of the two services which would cause the unit costs to differ between sectors. This was most likely to be the case with CPN inputs. It may have been the case that there was a greater intensity of non-direct client contact (staff meetings, etc.) in the intensive sector, which would result in a higher unit cost. This hypothesis could not be tested as only direct client contact time was measured. However, it was also the case that the standard care sector employed relatively higher nursing grades and so the unit cost there would also be higher. As there were cost-raising idiosyncrasies in both sectors, it was felt reasonable to use the same unit cost figure for CPN care.

For medication the cost of a depot injection was used throughout except for those clients using clozapine. For these the unit costs were the same as those used by Aitchison & Kerwin (1997), inflated to 1995/96 prices. The prices of localised services, such as hospital services and day centres, were calculated with reference to the capital value of the service base and the level of expenditure, with information being extracted from annual accounts where available.

Accommodation costs

Accommodation and daily living activities are key components of community care. Accommodation costs are made up of a capital element and the level of daily living expenditure, for example on food. For supported accommodation this information was obtained from the annual accounts of the specific facility.

Just as the cost of supported accommodation has been measured, the cost of mainstream accommodation should not be ignored, because some of the elements of supported accommodation are also found in non-supported housing. These elements consist mainly of 'hotel items': expenditure on food, heating, etc. Two solutions exist: either the net costs of supported accommodation (those costs which do not occur within mainstream settings) should be reported, or the gross costs of both supported and non-supported accommodation should be included. The latter option is less problematic and is adopted here.

Informal care

Relatives and friends of the people in this study were often providers of care. Such informal carers are not paid and, therefore, this constitutes a hidden cost. The value of informal care resources is calculated with reference to opportunities foregone. These resources could potentially be used to provide care to others and, therefore, to command a salary. We have taken the value of informal care to be equal to the cost of paid home help.

Since the distribution of cost data is typically skewed, non-parametric tests have been used throughout this paper.

RESULTS

The initial case identification exercise revealed 514 people with an ICD–10 psychotic diagnosis who were resident in one of the two sectors during the index year. A random sample of 320 of these people were selected for interview. A total of 211 CSRIs were completed at Time 1, 174 at Time 2, and 150 at both time points. Non-completion at both points in time, respectively, was due to refusal to be interviewed (25.6%, 22.8%), the subject being unobtainable (5.0%, 14.4%), subject being dead (1.6%, 6.3%) and for other reasons (1.9%, 2.2%). Of the 150 subjects interviewed at both points in time, four (2.7%) did not receive a relevant diagnosis of psychosis by the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organization, 1992) or by the Operational Criteria Checklist (OPCRIT; McGuffin *et al*, 1991), and 24 (16.0%) were excluded because they were not in potential receipt of care from the sector teams due to non-residence in the area. (Some subjects had moved from the research area but still received care from these teams. One subject in the standard sector was resident in a high-security hospital outside the sector. These were included in this study.) Therefore, the relevant sample in this paper numbers 123 subjects (62 in the intensive sector and 61 in the standard sector).

Representativeness of the interviewed sample

The interviewed subjects were reasonably representative of all epidemiologically identified service users with psychosis (see Table 3 of Thornicroft *et al* (1998), paper 1 in this issue). There were some differences, however. For example, in the standard sector those patients interviewed had a significantly higher mean index year Global Assessment of Functioning (GAF; Endicott *et al*, 1976) score than those not interviewed (mean difference= −5.0, 95% CI −9.4 to −0.6; *t*-test). A higher proportion of the final sample of standard sector subjects were single, living in non-supported accommodation during the index year, living on their own during the index year, had been out-patients in the index year, and had been convicted of an offence during their lifetime (χ^2 test).

Subject characteristics

Table 1 gives details of some of the main socio-demographic and psychiatric characteristics of interviewed subjects during the index year prior to interview. Men and women were fairly equally represented. Relatively few clients were married or cohabiting. The vast majority had been admitted to hospital at some time. A significantly higher proportion of subjects in the intensive sector had been in-patients for longer than one year at some time, and the mean GAF score was significantly lower in the intensive sector (mean difference= −7.5, 95% CI= −12.9 to −2.2; *t*-test).

Table 1 Comparison of subject characteristics between intensive and standard sectors

Characteristics	Intensive sector (n=62)[1]	Standard sector (n=61)[1]
Age; mean (95% CI)	43 (40–47)	43 (39–47)
Gender		
Male	34 (55, 42–68)	30 (49, 36–62)
Female	28 (45, 33–58)	31 (51, 38–64)
Ethnicity		
White	40 (65, 51–76)	37 (61, 47–73)
Black Caribbean	16 (26, 16–39)	17 (28, 17–41)
Black African	3 (5, 1–14)	4 (7, 2–16)
Other	3 (5, 1–14)	3 (5, 1–14)
Marital status		
Married	13 (21, 12–33)	6 (10, 4–20)
Cohabiting	1 (2, 0–9)	3 (5, 1–14)
Single	36 (58, 45–71)	31 (51, 38–64)
Divorced	6 (10, 4–20)	8 (13, 6–24)
Separated	4 (7, 2–16)	4 (7, 2–16)
Widowed	2 (3, 0–11)	9 (15, 7–26)
Diagnosis		
Functional psychosis	42 (68, 55–79)	44 (72, 59–83)
Affective psychosis	13 (21, 12–33)	8 (13, 6–24)
Other psychosis	7 (11, 5–22)	9 (15, 7–25)
Psychiatric history		
Mean years since first contact (95% CI)	20 (16–23)	17 (14–20) (n=57)
Ever admitted	44 (96, 85–100) (n=46)	52 (93, 83–98) (n=56)
Any stay > 1 year	10 (21, 11–35) (n=48)	3 (6, 1–17) (n=49)

Significantly greater than other sector: *P < 0.05.
1. Number (%, 95% CI of %) unless stated otherwise.

These two factors imply that the intensive sector clients were on average significantly more disabled than those in the standard sector.

Service utilisation

Details of services used at least once during the Time 1 and Time 2 six-month cost periods are shown in Table 2. Some individual services have been grouped into broader categories as defined earlier. Four larger aggregate groups of services are also described: psychiatric services (as defined above), non-accommodation services (all formal services in Table 2 except supported accommodation), all formal services (including supported accommodation); and all services (including informal care and non-supported accommodation).

In both sectors and at both times a majority of subjects had contact with psychiatrists, GPs, other general health care staff, and were using medication for psychotic symptoms. It should be noted that the figures in Table 2 for psychiatrists and occupational therapists are for contacts which are not included elsewhere. It is the case that these professionals are also often seen in in-patient and day-patient settings. The majority of subjects were living in independent settings.

Using Fisher's exact test (for sector comparisons) and McNemar's test (for time comparisons), it was shown that there were a number of significant ($P<0.05$) differences. At Time 1 and Time 2 a significantly higher proportion of intensive sector subjects used supported accommodation. This reflects the greater supply of such accommodation in the intensive sector. Another supply side-effect can be seen with regard to day care. The intensive sector relied particularly on the day hospital at Time 1 and then focused on day centre care, whereas the standard sector had invested largely in sheltered work. The significant sector and time differences for these three day care services illustrate these characteristics well. Overall, a significantly higher proportion of intensive sector than standard sector subjects used day care at Time 2.

At Time 1 in-patient care was used by a higher (but non-significant) proportion of the intensive sector subjects. This proportion had fallen by Time 2. At Time 1 a significantly higher proportion of subjects in the standard sector had general health input.

Table 3 details the intensity of input for those clients *actually using services*. The number of contacts with day care services was high as users often attend regularly and frequently. The number of in-patient contacts was equated to the number of in-patient days, the assumption being that each new day on an in-patient ward constituted a new contact. Few differences between sectors or over time were statistically significant when tested (Mann–Whitney *U*-test). The Time 2 quantity of CPN care for the intensive sector subjects was significantly higher than that for the standard sector subjects and the intensive sector subjects at Time 1. In the standard sector the intensity of psychiatrist contacts was also higher at Time 1 than Time 2.

Service costs

The six-month service costs are presented in Table 4. The average costs relate only to those subjects using the service. In-patient care is generally the most expensive service, followed by supported accommodation. GP care is shown to be relatively inexpensive. CPN care was more expensive both at Time 1 and Time 2 in the intensive sector than in the standard sector. Supported accommodation was more expensive in the standard sector at both time points. Day centre costs were significantly higher for the intensive sector subjects at Time 1 compared with Time 2. In the standard sector psychiatrist costs were significantly higher at Time 1 compared with Time 2. At Time 2 sheltered work was significantly more expensive for the standard sector subjects than for those using this service in the intensive sector (Mann–Whitney *U*-tests).

The intensive sector subjects had significantly more expensive packages of care

Table 2 Number (%) of subjects using services at least once during six-month cost period

Service[1]	Intensive sector ($n=62$)		Standard sector ($n=61$)	
	Time 1	Time 2	Time 1	Time 2
Supported accommodation	19 (30.6)***	20 (32.3)***	1 (1.6)	2 (3.3)
Non-supported accommodation	43 (69.4)	43 (69.4)	59 (96.7)***	58 (95.1)***
In-patient care	19 (30.6)	12 (19.4)	9 (14.8)	11 (18.0)
Emergency clinic	10 (16.1)	8 (12.9)	10 (16.4)#	3 (4.9)
Medication	39 (62.9)	52 (83.9)##	53 (86.9)**	48 (78.7)
Day hospital	17 (27.4)*###	2 (3.2)	6 (9.8)#	0 (0.0)
Day centre	13 (21.0)	28 (45.2)###***	13 (21.3)	11 (18.0)
Sheltered work	2 (3.2)	5 (8.1)	12 (19.7)**	12 (19.7)
Any day care	30 (48.4)	32 (51.6)*	25 (41.0)	20 (32.8)
Psychiatrist	45 (72.6)	40 (64.5)	43 (70.5)	48 (78.7)
CPN	19 (30.6)	28 (45.2)	25 (41.0)	31 (50.8)
Psychologist	3 (4.8)	1 (1.6)	6 (9.8)	2 (3.3)
OT	2 (3.2)	7 (11.3)	7 (11.5)	1 (1.6)
GP	36 (58.1)	37 (59.7)	44 (72.1)	42 (68.9)
General health	33 (53.2)	39 (62.9)	44 (72.1)*	35 (57.4)
Social worker	14 (22.6)	16 (25.8)	13 (21.3)	7 (11.5)
Social services	4 (6.5)	11 (17.7)	6 (9.8)	5 (8.2)
Legal	8 (12.9)	12 (19.4)	11 (18.0)	12 (19.7)
Employment	6 (9.7)	6 (9.7)	12 (19.7)	7 (11.5)
Education	4 (6.5)	5 (8.1)	6 (9.8)	6 (9.8)
Informal care	9 (14.5)	10 (16.1)	12 (19.7)	7 (11.5)
Psychiatric services	58 (93.5)	57 (93.4)	56 (90.3)	56 (91.8)
Non-accommodation services	62 (100.0)	60 (96.8)	61 (100.0)	60 (98.4)
All formal services	62 (100.0)	60 (96.8)	61 (100.0)	60 (98.4)
All services	62 (100.0)	62 (100.0)	61 (100.0)	61 (100.0)

Significantly greater than other sector: *$P<0.05$, **$P<0.01$, ***$P<0.001$.
Significantly greater than other time period: #$P<0.05$, ##$P<0.01$, ###$P<0.001$.
1. See text for service definitions.
Note: Sime's test shows that at Time 1 and Time 2 there are significant ($P<0.05$) sector differences overall. In the intensive sector there is a significant time difference. There was no overall significant difference between Time 1 and Time 2 in the standard sector.
CPN, community psychiatric nurse; OT, occupational therapist; GP, general practitioner.

than those in the standard sector for core psychiatric services, non-accommodation services (Time 2 only) and all services. If the costs of non-supported accommodation and informal care are also included then there is no significant sector difference because of the high number of users of the former in the standard sector.

Supported accommodation and in-patient care together accounted for 65.9% and 52.4% of total service costs for intensive sector subjects at Time 1 and Time 2, respectively (Table 5). The respective figures for the standard sector were 50.6% and 52.2%. GP care accounted for around 1% in both sectors at both times, even though it was used by the majority of subjects. It can be seen that there is a proportionally higher contribution made to the total by psychiatric services in the standard care sector. Two people at baseline and four at follow-up used clozapine for their psychotic symptoms. These people accounted for 36% and 56% of the total medication costs respectively.

A small number of people have accounted for a disproportionate amount of cost. The 10 (16.1%) most expensive individuals in the intensive sector accounted for 51.3% and 43.7% of service costs at Time 1 and Time 2, respectively. Similarly, the figures for the 10 (16.4%) most expensive individuals in the standard sector were 61.3% and 61.0%. Seven of the 10 most expensive intensive sector subjects at Time 1 were also among the 10 most expensive at Time 2. This was the case for four of the standard sector subjects.

Table 6 shows the total costs (service costs plus non-accommodation and informal care costs). It can be seen that the 'hidden' cost of non-supported accommodation is the predominant cost item for the standard sector subjects.

DISCUSSION

This study presents comprehensive measures of service utilisation and cost for two reasonably representative samples of people with psychosis within epidemiologically defined geographical sectors. By focusing on a particular group (people with psychosis) it provides important information for policy-makers who wish to prioritise and target this group (Department of Health, 1991). Two models of community care provision have been compared, and this should aid those planning and developing services. The study employed a 'bottom-up' approach where actual service use by the subjects of the study was costed. This is different from starting with the overall budgets for the agencies providing care and dividing this by case load numbers. There should be a relationship between the two methods, although the latter would tend to be greater if many non-direct service user contact costs were included. The approach used meant that non-service-user time was not costed, although unit costs do contain an element relating to overheads. Costs based on budgets would have been higher, but would not have reflected direct service use.

Some of the findings may not be directly generalised, as Camberwell is a particularly deprived area. The overall annual prevalence rate for psychotic disorders in our study is at the top end of the range (0.2–0.9%) identified by a recent survey (Office of Population Censuses and Surveys, 1995). We have reported many

Table 3 Mean (median) number of service contacts among subjects using services during the previous six months

Service[1]	Intensive sector				Standard sector			
	Time 1		Time 2		Time 1		Time 2	
	Mean (Median)	Range	Mean (Median)	Range	Mean (Median)	Range	Mean (Median)	Range
In-patient care	49.2 (31)	2–134	41.7 (35.5)	8–111	53.7 (41)	12–182	40.2 (25)	3–182
Emergency clinic	1.6 (1)	1–4	1.4 (1)	1–3	2.0 (2)	1–4	1.3 (1)	1–2
Medication	10.7 (12)	3–25	10.5 (12)	3–12	10.9 (12)	1–15	10.6 (12)	4–12
Day hospital	72.7 (62.5)	6–127	92.5 (92.5)	60–125	44.5 (50.5)	4–75	0	0
Day centre	71.5 (75)	2–128	53.5 (47)	1–128	36.9 (41)	1–127	35.1 (25)	1–100
Sheltered work	79.0 (79)	35–123	35.0 (22)	3–84	78.8 (75)	39–127	90.7 (100)	16–128
Psychiatrist	6.2 (4)	1–29	6.4 (3)	1–46	4.7 (3)#	1–20	3.3 (3)	1–14
CPN	14.8 (15.5)	1–37	32.3 (13)**#	1–187	7.7 (6)	1–25	8.1 (6)	1–25
Psychologist	3.7 (4)	1–6	12 (–)	12–12	6.0 (6)	2–12	3.5 (3.5)	2–5
OT	3.5 (3.5)	3–4	10.6 (6)	1–51	2.7 (2)	1–6	20.0 (NA)	20–20
GP	4.5 (2.5)	1–52	2.5 (2)	1–12	3.2 (2)	1–12	2.6 (2)	1–20
General health	2.9 (2)	1–13	12.2 (3)	1–197	3.4 (2)	1–26	4.3 (2)	1–54
Social worker	6.0 (2)	1–24	3.2 (1)	1–12	5.3 (3)	1–26	5.8 (2)	1–26
Social services	34.0 (33)	20–50	43.5 (25)	1–127	107.5 (104)	13–216	159.6 (182)	13–264
Legal	6.5 (3.5)	1–22	1.7 (1.5)	1–3	2.5 (1)	1–12	2.3 (1)	1–7
Employment	3.5 (2.5)	1–7	5.2 (3.5)	2–12	6.3 (3)	1–24	53.1 (12)	1–254
Education	22.5 (14)	2–60	21.2 (17)	1–46	25.7 (14)	5–69	13.4 (16)	2–24
Informal care	36.5 (28)	2–126	34.6 (10)	1–124	94.1 (42)	1–546	74.3 (78)	2–186

Significantly greater than other sector: $^{**}P < 0.01$; significantly greater than other time period: $^{\#}P < 0.05$.
1. See text for service definitions.
Note: Sime's test shows that there is overall significant ($P < 0.05$) difference between Time 1 and Time 2 in either sector, or between sectors at Time 1 and Time 2. Other comparisons do not reveal overall significant differences.
CPN, community psychiatric nurse; OT, occupational therapist; GP, general practitioner.

Table 4 Mean (median) service costs among subjects using services during the previous six months (1995/96 £s)

Service[1]	Intensive sector				Standard sector			
	Time 1		Time 2		Time 1		Time 2	
	Mean (Median)	Range	Mean (Median)	Range	Mean (Median)	Range	Mean (Median)	Range
Supported accommodation	3895 (3856)	2702–5739	3875 (3527)	239–7466	6384 (NA)	6384–6384	7489 (7489)	6384–8594
Non-supported accommodation	3083 (3018)	951–5488	3454 (3192)#	1174–10 086	3523 (3377)	1608–6593	3758 (3580)	1814–8808
In-patient care	5583 (3453)	165–20 027	4079 (3169)	573–13 071	7045 (3484)	1211–33 977	4833 (1887)	191–33 977
Emergency clinic	69 (43)	43–172	59 (43)	43–129	86 (86)	43–172	57 (43)	43–86
Medication	149 (64)	16–2114	197 (64)	15–2114	111 (64)	37–2114	119 (64)	48–2114
Day hospital	1472 (971)	2–3656	1994 (1994)	1827–2160	1138 (1439)	20–2272	0	0
Day centre	1208 (910)*	8–2685	766 (381)	15–3959	259 (225)	2–936	388 (339)	7–1016
Sheltered work	3944 (–)	3944–3944	419 (272)	2–1132	1625 (1509)	588–2957	1641 (1886)*	91–2641
Psychiatrist	222 (172)	22–776	291 (129)	4–2975	200 (129)#	11–862	145 (129)	43–604
CPN	726 (819)	12–1750	980 (560)**	15–3646	233 (208)	5–702	200 (105)	14–702
Psychologist	118 (118)	77–158	926 (NA)	926–926	623 (389)	154–1863	235 (235)	79–391
OT	63 (–)	63–63	596 (178)	67–2551	75 (23)	12–273	889 (NA)	889–889
GP	27 (19)	5–97	36 (24)	2–257	42 (31)	2–386	19 (19)	17–21
General health	211 (60)	5–3485	505 (44)	12–5699	154 (38)	2–3335	85 (49)	3–527
Social worker	42 (10)	0.3–251	46 (22)	3–251	79 (38)	4–514	28 (21)	11–47
Social services	343 (309)	163–556	1070 (191)	16–7017	570 (620)	65–989	1764 (450)	71–7366
Legal	370 (73)	36–1299	40 (19)	5–194	34 (23)	7–97	207 (23)	5–1538
Employment	7 (5)	2–15	11 (7)	4–25	13 (6)	2–50	395 (25)	2–1477
Education	84 (38)	10–203	83 (87)	2–156	145 (107)	21–350	105 (95)	41–189
Others	43 (43)	38–47	56 (21)	10–125	10 (NA)	10–10	14 (10)	5–38
Informal care	1296 (843)	13–3838	2192 (645)	353–9984	1682 (772)	11–7573	1856 (2179)	161–3382
Psychiatric services	2791 (1220)*	45–20 086	1991 (831)**	43–13 548	1664 (437)#	64–33 977	1296 (259)	64–33 977
Non-accommodation services	3212 (1728)	16–20 086	2720 (1794)*	52–14 514	2156 (848)	43–34 213	1926 (872)	49–34 692
All formal services	4406 (2445)*	16–24 938	4012 (2802)**	52–14 514	2260 (996)	43–34 213	2175 (1108)	49–34 692
All services	6723 (5262)	1859–24 938	6568 (5456)	2115–17 654	6228 (5185)	2439–34 213	5923 (5103)	2485–34 692

Significantly greater than other sector: *$P<0.05$, **$P<0.01$, ***$P<0.001$, Significantly greater than other time period: #$P<0.05$.
1. See text for service definitions; – =could not be calculated because of missing data.
Note: Sime's test shows that there is an overall significant ($P<0.05$) difference at Time 2 between the sectors. Other comparisons do not reveal overall significant differences.
CPN, community psychiatric nurse; OT, occupational therapist; GP, general practitioner.

service use findings which may aid extrapolation in conjunction with localised unit cost information (Jefferson *et al*, 1996).

Data on medication were not extensively measured. Figures were available for patients using clozapine. These were few in number, and it is expected that these figures would be far higher now. As it is, the clozapine users account for a highly disproportionate amount of the total medication costs.

A broad range of services are used by people with mental health problems, and these are often provided by non-mental health agencies. This identification of multi-agency provision adds weight to the importance of close working between such agencies. The need for a comprehensive approach to costing is emphasised by the fact that a large proportion of the cost burden falls to services which are not core psychiatric services. GPs, psychiatrists, general health care, and medication are used by a majority of service-users. However, only a small number of services contribute to most of the overall cost. This finding is in common with previous studies (Knapp & Beecham, 1993). The frequent use, but low cost, of GP services is of interest.

The pattern of care changed over time in the two sectors. At Time 1 the intensive sector was characterised by heavy utilisation of supported accommodation, in-patient care and day hospital services. By Time 2 a transition had been made to more use of day centres and CPNs, while the use of in-patient care fell. The use of supported accommodation did not show much change. In the standard care sector there was also a move from hospital-based provision of some services to community provision. Greater stability was apparent in this sector. The proportion of people using in-patient care rose in the standard sector, but this was not statistically significant. (Among interviewed and non-interviewed subjects the proportion of those admitted fell in both sectors over time.)

The supply side-effect of supported accommodation in the intensive sector was the major factor in total service costs being significantly higher than in the standard sector. Significant cost differences were also apparent when supported accommodation costs are ignored, and when only core psychiatric services are focused on. When the broadest category of cost was utilised the cost difference becomes non-significant. While broad social costs are in principal the most important, at the service provision level they are seen to be less relevant.

The significant cost differences between the sectors existed at both Time 1 and Time

Table 5 Aggregate cost of services and contribution to total (1995/96 £s) during the six-month cost period

Service[1]	Intensive sector (*n*=62)		Standard sector (*n*=61)	
	Time 1	Time 2	Time 1	Time 2
Supported accommodation	74 008 (27.1)	77 508 (32.2)	6384 (4.6)	14 978 (11.5)
In-patient care	106 085 (38.8)	48 688 (20.2)	63 407 (46.0)	53 157 (40.7)
Emergency clinic	690 (0.3)	474 (0.2)	862 (0.6)	172 (0.1)
Medication	5697 (2.1)	9615 (4.0)	5937 (4.3)	5615 (4.3)
Day hospital	24 645 (9.0)	3987 (1.7)	5982 (4.3)	0 (0.0)
Day centre	14 597 (5.3)	21 440 (8.9)	3191 (2.3)	4310 (3.3)
Sheltered work	5013 (1.8)	3259 (1.4)	18 929 (13.7)	19 787 (15.2)
Any day care	44 255 (16.2)	28 687 (11.9)	28 102 (20.4)	24 097 (18.5)
Psychiatrist	12 176 (4.5)	11 240 (4.7)	8532 (6.2)	6534 (5.0)
CPN	11 966 (4.4)	21 849 (9.1)	5816 (4.2)	5713 (4.4)
Psychologist	467 (0.2)	926 (0.4)	3740 (2.7)	470 (0.4)
OT	148 (0.1)	4174 (1.7)	600 (0.4)	889 (0.7)
GP	1631 (0.6)	1340 (0.6)	1885 (1.4)	1166 (0.9)
General health	10 853 (4.0)	22 484 (9.3)	6778 (4.9)	2634 (2.0)
Social worker	708 (0.3)	592 (0.2)	976 (0.7)	728 (0.6)
Social services	1835 (0.7)	11 489 (4.8)	3421 (2.5)	8822 (6.8)
Legal	2250 (0.8)	411 (0.2)	408 (0.3)	2144 (1.6)
Employment	44 (*)	96 (*)	156 (0.1)	2762 (2.1)
Education	298 (0.1)	487 (0.2)	872 (0.6)	555 (0.4)
Others	85 (*)	658 (0.3)	10 (*)	84 (0.1)
Psychiatric services	161 873 (59.3)	111 472 (46.3)	94 876 (68.8)	72 558 (55.6)
Non-accommodation services	199 186 (72.9)	163 211 (67.8)	131 502 (95.4)	115 543 (88.5)
All formal services	273 194 (100.0)	240 719 (100.0)	137 885 (100.0)	130 521 (100.0)

1. See text for service definitions.
*Non-zero value below 0.1.
CPN, community psychiatric nurse; OT, occupational therapist; GP, general practitioner.

Table 6 Aggregate non-supported accommodation, informal care, service costs and contribution to total (1995/96 £s) during the six-month cost period

Service	Intensive sector (*n*=62)		Standard sector (*n*=61)	
	Time 1	Time 2	Time 1	Time 2
Non-supported accommodation	132 558 (31.8)	148 522 (36.5)	207 834 (54.7)	217 941 (60.3)
Informal care	11 071 (2.7)	17 994 (4.4)	34 160 (9.0)	12 862 (3.6)
All formal services	273 048 (65.5)	240 719 (59.1)	137 885 (36.3)	130 521 (36.1)
All services	416 823 (100.0)	407 234 (100.0)	379 879 (100.0)	361 325 (100.0)

2 and as such the cost difference does not appear to have been caused by the intervention in the intensive sector. The intensive sector service was expensive prior to the intervention taking place. The cost reduction in the intensive sector was greater than that in the standard sector as it was mainly caused by the fall in the use of in-patient care.

There are a small number of service users who account for a disproportionate amount of costs. Similar findings have been reported elsewhere (Casper & Pastva, 1990; Hadley *et al*, 1990). Such a group of 'heavy service users' may warrant special targeting of services, and will be the subject for further analysis of the results of this study in future.

The main findings, however, are that at the baseline period more intensive sector subjects had in-patient stays but by the follow-up period this difference had lessened. There was significantly more use of supported accommodation in the intensive sector during both time periods. Baseline and follow-up total service costs were significantly higher for the intensive sector. Costs were spread disproportionately among the sample, and a small number of services accounted for a large amount of cost. In both sectors there were non-significant reductions over time in total service costs.

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CLINICAL IMPLICATIONS

- Patients in contact with psychiatric services use a wide range of other community-based services.
- The provision of certain types of care, such as supported accommodation, leads to higher costs.
- A small number of services accounts for most costs, as do a disproportionate amount of patients.

LIMITATIONS

- The high costs in the intensive sector existed before the community services were developed.
- There were some differences in patient characteristics between the sectors which may have influenced cost.
- This paper has not linked cost with outcome.

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