

Economics and Schizophrenia: The Real Cost

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The total direct cost of treating schizophrenia in the UK is £397 million, or 1.6% of the total health care budget. Hospital-based and community-based residential care accounts for nearly three-quarters of these costs, while drugs account for only 5%. A conservative estimate of the indirect annual costs of lost production is in the region of £1.7 billion. The heterogeneity of the disease and its outcome means that average treatment costs per person with schizophrenia should be treated with caution; 97% of direct costs are incurred by less than half the patients. Therefore, treatments which reduce the dependence and disability of those most severely affected by schizophrenia are likely to have a large effect on the total cost of the disease to society and may therefore be cost-effective, even though they appear expensive initially.

The treatment and care of people with schizophrenia involve a range of health and social welfare services. The extent of service use will depend upon the severity and duration of disease and the availability of hospital, residential and community-based services, as well as other factors. Although the costs of drug therapy for people with the disease are relatively low, the total costs of treatment and care are high (Davies & Drummond, 1990). Andreasen (1991) has suggested that it is “probably the most costly illness that psychiatrists treat”.

Recent policy changes have led to the closure of long-stay institutions and the transfer of patients into the community. Opponents of the policy have suggested that it results in diminished services and lower quality of life for patients, whereas proponents suggest that the policy will not only reduce direct treatment costs, but also improve the quality of patients’ lives. An extensive review of published studies concluded that “care in the community is generally cheaper than care in a hospital, although none of these studies indicate that it is better” and notes that “the more expensive treatment may sometimes be cheaper for society” (Goldberg, 1991).

This paper presents estimates of both the direct and indirect costs of schizophrenia in the UK, and considers ways in which these might be reduced by effective therapies.

The cost of schizophrenia

The costs to society of schizophrenia include the direct costs of treatment and care, the indirect costs of lost production, and the intangible costs of pain and suffering due to reductions in the quality of life. Estimates of both the direct and indirect costs were

published in 1990. These included the total annual and lifetime costs of the disease for the UK, using 1987 unit cost or price data (Davies & Drummond, 1990); these estimates have been updated to 1990/91 prices and are presented in Tables 1 and 2.

Direct costs

Table 1 presents the average direct treatment costs per person per year. The annual average direct cost of treating a person with schizophrenia in the UK is £2138, while the annual treated prevalence of schizophrenia has been estimated at approximately 185 400 people in the UK (Davies & Drummond, 1990). Combining these figures gives a total annual direct treatment cost of £396 million, or 1.6% of the total health care budget. Residential care, both hospital- and community-based, accounts for nearly three-quarters of all costs. Although approximately 75% of people with schizophrenia receive regular neuroleptic medication, the cost of drugs represents only 5% of the direct costs of schizophrenia.

Combining the average cost of treating a person with schizophrenia with estimates of the prevalence of the disease provides a useful indication of the overall costs to the health service in one year. However, decision-makers also require information on how these costs are distributed between people with differing severities of disease. For this, an estimate of costs based on various outcomes of schizophrenia is required. This ‘incidence approach’ allows calculation of the lifetime costs of a cohort of people with schizophrenia from the onset of the disease to death.

Table 2 gives the lifetime costs of treatment and care for five groups of people with schizophrenia.

Table 1
Average annual resource use and treatment costs per person with schizophrenia in the UK, 1990/91

Service	Average use	Average cost/ person: £	% of total costs
Institutional/residential care: days	35.3 ¹	1580	74
Hospital out-patient: visits	1.4 ²	72	3
Daycare: days	11.1 ²	292	14
Community-based support: visits	11.3 ²	81	4
Depot injection clinic: visits	31.1 ²	41	2
Other drug therapy	-	72	3
Total		2138	100

1. Department of Health (1988), Johnstone *et al* (1986), Freeman & Alpert (1986), Department of Health and Social Security (1984).
2. Goldberg & Jones (1980).

These groups were based on the classification of outcome used by Prudo & Blum (1987):

- (a) group 1, only a single episode of schizophrenia, with an average duration of 22 weeks
- (b) group 2, episodes of major disorder lasting up to 1 year
- (c) group 3, episodes for 1–2.5 years
- (d) group 4, episodes more than 2.5 years:
 - group 4a, requiring predominantly community-based care
 - group 4b, requiring long-term care either in hospital or intensive community programmes.

The lifetime costs ranged from £1700 to £316 000 per person. Combining this with estimates of the incidence of the disease, the total costs for a one-year incidence cohort were £390 million. This ranged from £3 million for group 1 to £309 million for group 4b. Furthermore, 97% of the total lifetime direct treatment costs were incurred by those in groups 4a

Table 2
Lifetime resource use by outcome group

	Group 1	Group 2	Group 3	Group 4a	Group 4b
Number (%) of patients	1862 (19%)	2940 (30%)	980 (10%)	3038 (31%)	980 (10%)
<i>Direct costs</i>					
Care before first admission: visits ¹	4.9	4.9	4.9	4.9	4.9
First admission: days ²	26	26	26	26	26
Subsequent in-patient stay: days ³	0	0	27	562	13 505
Hospital out-patient: visits ^{1,4}	0.6	1.4	2.4	51.8	0
Day care: days ^{1,4}	4.7	11.1	19.4	410.7	1776 ⁵
Drug therapy: weeks ^{1,4}	22	52	91	1924	1924
Community support: visits ^{1,4}	4.7	11.3	20	418	0
Lifetime cost of treatment/care: £	1715	1958	3789	22 579	315 776
Total direct costs of cohort: £ millions	3.2	5.8	3.7	68.3	309.5
<i>Indirect costs</i>					
Length of unemployment: years	0.4	1	37	37	37
Lifetime cost of lost production: £	6259	10 467	219 686	219 686	219 686
Total indirect cost of cohort: £ millions	11.6	41.3	215.3	667.1	215.3
Total lifetime cost of cohort: £ millions	14.8	47.1	219	735.4	524.8

1. Goldberg & Jones (1980).
2. Crow *et al* (1986).
3. Goldberg & Jones (1980), McCabe (1988), Department of Health and Social Security (1984), Freeman & Alpert (1986), Scottish Home and Health Department (1989), Department of Health (1988).
4. Annual service use reported by Goldberg & Jones (1980) multiplied by length of illness.
5. Assumes that these patients would receive no hospital-based services but would attend day-care services one day per week, 48 weeks per year, for the duration of the illness.

Table 3
Sensitivity analysis of effects of changing outcome on direct costs

	Group 1	Group 2	Group 3	Group 4a	Group 4b	Total cost
Proportion	19%	30%	10%	31%	10%	
Direct costs: £ millions	3.19	5.76	3.71	68.6	309.46	390.71
Proportion	19%	30%	10%	36%	5%	
Direct costs: £ millions	3.19	5.67	3.71	79.66	154.73	247.05
Proportion	19%	35%	5%	31%	10%	
Direct costs: £ millions	3.19	6.72	1.86	68.60	309.46	389.82

and 4b, who constitute less than half a one-year incidence cohort.

Indirect costs

To estimate the annual indirect costs of lost production, it was assumed that 70–80% of people with schizophrenia would be unemployed, and that 20% would have been unemployed in the absence of the disease. This meant that 111 000 people with schizophrenia incurred production losses due to the disease every year (Davies & Drummond, 1990). Using an annual average wage of £14 912 (Central Statistical Office, 1992), the annual indirect costs of schizophrenia are in the region of £1.7 billion. Table 2 shows the distribution of lifetime indirect costs due to lost production by severity of illness.

These are conservative estimates of indirect costs, based on the loss of earnings of the patients only. Schizophrenia generally occurs in early adult life, when the burden of care often falls on the patient's family, who may also suffer loss of earnings. An American study has estimated that the value of time contributed by relatives for care of the mentally ill in 1985 was \$2.5 billion (McGuire, 1991). A UK survey of over 100 patients found that 10% of families looking after someone with schizophrenia reported financial difficulties due to the patient's illness, 2.5% had stopped work to look after the patient, and 6.7% had taken time off work. An earlier, smaller study ($n=42$) in the UK found that 16% of carers questioned had stopped work to look after a relative with schizophrenia (Johnstone *et al*, 1991).

Similarly, the costs of earnings lost through premature mortality due to schizophrenia are not included. While this is difficult to measure precisely, a number of studies have suggested that the disease carries a high mortality. Anderson *et al* (1991), analysing deaths from the Northwick Park study

group, found that the mortality among schizophrenics was at least twice that expected in the total population (standardised mortality rate (SMR) was 2.57 for women, 2.44 for men), and that the risk of suicide was increased between 13-fold and 20-fold (SMR 12.77 for women, 19.5 for men). The highest risk of suicide was seen in the 15–44-year age group, who were almost 30 times more likely to die by suicide than their peers (SMR 29.25 for women, 27.85 for men). These are similar to the findings of a Swedish study which showed that the overall mortality among schizophrenics was twice that in the general population and the risk of suicide ten times higher (Allebeck, 1989).

Full comparisons of the cost and outcome of hospital-based or community-based care are beyond the scope of this paper. However, it can be seen that treatments which improve the symptoms of schizophrenia will reduce both the direct and indirect costs of the disease if they reduce disability, and thus the need for support from health care and personal social services.

Economic evaluation of new treatments

Given the substantial direct and indirect costs of treatment and care for people with schizophrenia, it is important to consider the cost-effectiveness of new treatments. For example, Table 3 shows the effects of varying the proportion of people who fall into the five outcome categories used to calculate the lifetime direct treatment costs. This shows the extreme sensitivity of lifetime costs to small changes in the proportion of patients falling into outcome groups 4a and 4b. If group 4b is reduced from 10% to 5%, with patients moving into group 4a, this would produce a 37% reduction in total lifetime direct cost. In contrast, if half the patients from group 3 are moved to group 2, less than 1% of total direct cost is saved. This suggests that treatments which can benefit the most severely ill schizophrenic

patients will have a larger effect on total costs, and that they are more likely to prove cost-effective in terms of direct costs than those that reduce the disability and dependence of less severely ill groups.

As Goldberg (1991) has noted, in terms of hospital and community care facilities, the more expensive treatments may sometimes be cheaper for society, and the full effect of a new treatment must be evaluated to determine its cost-effectiveness. For instance, it has been shown that the use of clozapine for treatment-resistant schizophrenia is cost-effective if it permits the discharge of at least 16% of such patients from institutions, despite the fact that one year's treatment with clozapine was calculated to cost nearly seven times as much as the equivalent treatment with standard neuroleptics (Davies & Drummond, 1993). This finding also highlights the difficulties of using average treatment costs within a heterogeneous population. The annual cost of clozapine at an average dose of 300 mg per day is £2007. This appears expensive when compared with the average annual treatment cost of only £2138 per person with schizophrenia in the UK. However, its use is restricted to treatment-resistant cases who probably fall into outcome groups 3 and 4, and its cost-effectiveness therefore needs to be calculated using the costs of treating this subpopulation. In the allocation of limited resources, it is necessary to determine whether one treatment is more cost-effective than another over the entire population, and to identify the costs for subgroups of patients who will benefit most from the expensive treatments.

Conclusions

The heterogeneity of people with schizophrenia and the variety of outcomes following initial diagnosis mean that average treatment costs must be treated with caution. Lifetime estimates of the costs of treating subgroups according to severity of disease may be more representative. Therapies which can improve outcome, especially those which reduce the

need for in-patient treatment, can be cost-effective even if they appear expensive compared with the average cost of treatment with existing therapies.

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