The Costs of Schizophrenia

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Reasonably accurate approximations of the financial costs of schizophrenia are the foundation for making judgments about the socioeconomic impact of the disorder and the cost-effectiveness of treatment modalities. The financial costs of schizophrenia to society can be divided into direct and indirect costs. Direct costs include treatment provided in inpatient, outpatient, and long-term care, as well as criminal justice costs, medication costs, and publicly owned capital such as state mental health facilities. Indirect costs mostly arise from the productivity loss suffered by individuals with schizophrenia, family members, and caregivers. The cost of schizophrenia in the United States in 2002 was estimated to be $62.7 billion. Compared with a 1991 estimate, inpatient costs have declined, whereas outpatient costs and medication costs have increased. When interpreting any data regarding costs, people should be aware of factors that influence results, such as the perspective from which the analysis was undertaken, the measures used in the analysis, and planned or unplanned bias.

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Reasonably correct approximations of the financial costs of schizophrenia are the foundation for making judgments about the socioeconomic impact of the illness and the cost-effectiveness of treatment modalities. To accurately calculate the financial costs to society of schizophrenia, both direct and indirect costs need to be taken into account. However, in interpreting any data regarding costs, factors that may affect the accuracy of the data should be considered.[1]

THE COSTS OF SCHIZOPHRENIA

The costs discussed here are the financial costs to society of schizophrenia and do not take into account the emotional costs of the disorder. The financial costs of schizophrenia can be divided into direct costs and indirect costs of the illness. Reasonable estimates of the costs of each facet of the illness and its treatment can be made from available databases, although each set of data has limitations.

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Direct Costs

Direct costs of schizophrenia to society include costs of treatment provided in inpatient care, outpatient care, and long-term care. Inpatient care is usually judged in terms of cost for a day (per diem) of inpatient stay. Outpatient care includes visits to the clinician, case management, vocational rehabilitation, supported employment programs, supportive activities in the community (such as psychosocial clubhouses), and assertive treatment programs. Assertive treatment programs are intensive programs that involve multiple staff and are available 24 hours. Because of their expense and intensity, these programs are only provided to the most severely ill patients. Long-term care generally includes supervised living facilities, such as assisted living and group homes.

Schizophrenic illness also incurs criminal justice costs. Patients who are actively ill, are off their medication, and have become psychotic are often taken into custody by the police because family members or others have called seeking involuntary commitment or because some unusual or dangerous behavior of the patient has attracted police attention. The police often have to contain the patient and bring him or her to the hospital for treatment. Unfortunately, jails are populated by many individuals with severe psychiatric illnesses, some of whom have committed serious crimes.

Another direct cost of schizophrenia is medication. Pharmacotherapy includes antipsychotic medications as well as adjunctive medications such as antidepressants or mood stabilizers that are used to enhance or increase the benefit of the antipsychotics. Concomitant medications are also used to treat side effects, such as anticholinergic medications or β-blocking medications for parkinsonism or akathisia.

A direct cost that tends to be overlooked is publicly owned capital, such as a state hospital building or a mental health center building where patients are treated.[1] In many cases, these buildings could hold substantial value if they could be diverted to other uses. For example, in North Carolina, a large state hospital on a substantial parcel of land in a high-value area of Raleigh is closing, and considerable discussion is taking place in county and city government regarding the use of the land that will no longer serve as a place for the treatment of patients with mental illnesses.

Indirect Costs

In addition to the direct costs of treating and managing patients with schizophrenia, large indirect costs arise from the illness. The indirect costs mostly originate from the decline in productivity suffered by individuals with schizophrenia. The illness typically starts during the patient's late teens and early 20s, years when individuals would normally expect to start attending college or begin a first job and commence a lifelong contribution to society. Instead, many patients lose the capacity to participate in the workforce, and even if they are able to work, they often do so at substantially lower levels of performance than might have been expected given their abilities and trajectory prior to the onset of the illness. Besides the productivity loss of the patient, productivity is also lost by family members, caregivers, and other people who contribute in-kind services and time.[1,2]

RECENT ESTIMATE OF THE COSTS OF SCHIZOPHRENIA

A recent example of an attempt to estimate the economic burden of schizophrenia is a study by Wu and colleagues[3] that examined the costs in the United States in 2002. Based on administrative claims data, the direct health care costs for privately insured patients with schizophrenia (N = 1090) were estimated separately from publicly insured California Medicaid (Medi-Cal) patients with schizophrenia (N = 14,074). The privately insured patient sample was drawn from a database that contained detailed information for a diverse group of beneficiaries (approximately 3 million) from 17 large national corporations from 1999 to 2003. The Medi-Cal sample consisted of a 20% random sample from about 2 million beneficiaries in the paid claims database from 2000 to 2003. Researchers used the Medical Care Consumer Price Index to adjust costs to 2002 dollars. Both sets of claims data provided information on patient demographics, a comprehensive overview of the direct health care costs that these patients incurred, and information on diagnoses, procedures, prescription drugs, physician visits, hospitalizations, and long-term care services. Patients from the 2 data sets were matched for age, gender, Medicare status, and zip code to a randomly selected control group at a ratio of 3 cases to 1.

Table 1. Excess Costs of Schizophrenia in the United States in 2002[a]

Type of Cost	Cost, $ (in millions)
Direct health care costs	
Drugs	5,043
Outpatient care/professional fees	6,951
Hospital inpatient stays and services	2,764
Long-term care	7,967
Total direct health care costs	22,726
Direct non–health care costs	
Law enforcement	2,637
Research and training	291
Homeless shelters	6,397
Total direct non–health care costs	9,325
Direct cost offsets	(1,739)
Indirect costs	
Unemployment	21,644
Reduced productivity at work	1,734
Premature mortality (suicide)	1,100
Caregiver	7,899
Total indirect costs	32,378
2002 Total excess costs	62,689

[a]Reprinted with permission from Wu et al.[3] Results were calculated using a prevalence rate of 5.1 per 1000 lives in the U.S. population.

Because individuals without schizophrenia incur some health costs to their private and public insurers, excess annual health care costs to society of patients with schizophrenia were estimated as the difference in mean annual costs between schizophrenia patients and their matched controls.[3] Lack of data for uninsured patients with schizophrenia made it difficult to estimate their direct health care costs, and the researchers assumed that these people did not incur excess direct health care costs.

According to Wu and colleagues,[3] the total excess costs associated with schizophrenia in the United States in 2002 were estimated to be $62.7 billion. As shown in Table 1, these costs were broken down into direct health care costs, direct non–health care costs, direct cost offsets, and indirect costs.

Direct Health Care Costs

The excess direct health care costs of schizophrenia in the United States in 2002 were approximately $22.7 billion, or 36% of the total excess costs associated with the illness.[3] This estimate comprised $8.0 billion (35%) for long-term care in supervised placement facilities, $7.0 billion (31%) for outpatient care/professional fees, $5.0 billion (22%) for drugs, and $2.8 billion (12%) for inpatient care.[3]

Direct Non–Health Care Costs

Wu and colleagues[3] estimated direct costs that do not involve health care to be approximately $9.3 billion (15% of the total excess costs associated with schizophrenia). Homeless shelters cost society $6.4 billion,

law enforcement cost $2.6 billion, and research and training cost $0.3 billion.

Direct Cost Offsets

A proportion of the direct non–health care costs would have occurred regardless of the schizophrenia diagnosis. For example, without schizophrenia, there would still be a need for law enforcement, and homeless shelters.[3] Basic living costs, such as food, clothing, and lodging, that would have been incurred by patients if they had not been lodged in inpatient programs, nursing homes, shelters, jails, and prisons were also subtracted from the overall cost estimates of the illness. A direct cost offset of $1.7 billion resulted.

Indirect Costs

Wu and colleagues[3] estimated 4 types of indirect costs to society associated with schizophrenia: increased unemployment, reduced productivity at work, caregiver costs, and premature mortality from suicide. However, research[4] has now shown that people with schizophrenia die approximately 15 years earlier than the general population largely because of cardiovascular disease, not suicide. According to Wu et al.,[3] the total excess indirect costs were estimated to be $32.4 billion (52% of all the schizophrenia-related costs). Patient unemployment was estimated at $21.6 billion, caregiver costs were estimated at $7.9 billion, reduced work productivity cost $1.7 billion, and premature mortality through suicide cost $1.1 billion.

FACTORS THAT AFFECT COSTS DATA

Cost-Shifting

In any review of costs, attention must be paid to cost-shifting, in which costs move from one category to another.[5] For example, the proportions of costs in 2002 reported by Wu et al.[3] can be compared with those of a similar study of 1991 costs by Wyatt et al.[6] Proportionately, inpatient costs have substantially declined, but outpatient costs have increased, as have medication costs.

Inpatient cost decline may be largely explained by changes in Medicaid payment practices and the expansion of managed behavioral health care programs that carefully monitor inpatient stays and urge clinical staff to return patients to outpatient status as early as possible. In addition, newer medications have become available since 1990.[5] Clozapine, in particular, has been shown to be associated with enduring outpatient status for many patients who would otherwise have been chronically hospitalized.[7–9]

Perspective

Cost-effectiveness analyses, which attempt to weigh the costs versus the benefits of treatment, should always state the perspective from which the study is undertaken.[1] Caregivers, patients, insurance staff, policy makers, and payers may each have different vantage points. For example, legislators who make funding allocations to public mental health systems may be concerned about decreasing violence or getting homeless people off the street, whereas patients may be most concerned about eliminating distressing side effects or having a better quality of life. The answer to the question "How much is a symptom-free day worth?" varies depending on perspective.[1] Comparisons of cost results across multiple perspectives may clarify differences in agendas, may identify areas of cost shifting that resulted from new programs and policies, and may lead to better joint understanding of costs.

To reach a clearer understanding of costs, people who make purchasing decisions need information about multiple domains of effectiveness. Policy makers need to know the impact of dollars invested in treatment; for example, if a treatment leads to reductions in cost of hospital care due to fewer days in the hospital but is accompanied by increased violence once the patient is back in the community, then it is a poor bargain. Several different measurements are available for assessing the cost-effectiveness for various treatment modalities.

Cost-utility analysis attempts to calculate a comprehensive outcome indicator as a preference-weighted sum of the outcome measures, thus reducing the impact of an intervention to one number.[1] For example, one group of stakeholders, such as patients, is asked to weigh the importance of various features of schizophrenia and its treatment. Features that might be weighed include the severity of voices or delusions, getting a good night's sleep, and side effects of medication such as weight gain or akathisia and restlessness. A representative group of individuals with the illness apply a value, importance, or currency to each feature of the illness and to various aspects of treatment. From the results, a formula is used to derive a single number. Cost-utility analysis sounds elegant in theory, but in practice different people weight individual features differently across studies.

One cost-utility measurement found in studies of the treatment of schizophrenia is quality-adjusted life-years (QALYs). However, this metric is based on one investigator's work and would seem more robust if several replications of patients' weightings of the importance of various symptoms and treatments were obtained. A simpler measurement might be the number of symptom-free, good, or happy days in a patient's life, which could be easier to measure.[10]

Ideally, for cost comparisons, numerous studies would be available, conducted by multiple investigators using similar but not identical methods, and they would take a variety of viewpoints and independently find some consistent patterns. Unfortunately, this is not the situation regarding the cost of schizophrenia; too few studies exist,

and in some cases they were carried out by stakeholders with a vested interest.

Data Selection

Opportunities to introduce bias are greater in economic studies than in studies of biological phenomena such as weight gain or events such as rehospitalization. The discretionary nature of data selection in cost studies can contribute to both planned and unconscious bias, so these studies should be approached especially critically. For example, although Wu and colleagues' study of costs in 2002[3] is the best available recent study of the total societal cost of schizophrenia, the cost may be an underestimate. The study did not take into account the costs of untreated, uninsured people with schizophrenia, and it is likely that these individuals do contribute some costs to society. Also, the premature mortality cost estimate might be larger if deaths due to natural causes such as cardiovascular disease had been included rather than only suicide deaths.

CONCLUSION

Estimates of the financial costs of schizophrenia to society in the United States from 1991 to 2002 indicate that, while inpatient costs decreased, outpatient and medication costs increased. When evaluating studies of the socioeconomic impact of schizophrenia on society, people should be aware that these analyses may reflect the perspectives of certain stakeholders. Also, data selection biases may exist and can affect estimates. More studies of the costs of schizophrenia are needed, representing multiple stakeholders and multiple domains of the illness, and using similar measurement techniques.

Drug name: clozapine (Clozaril and others).

Disclosure of off-label usage: The author has determined that, to the best of his knowledge, no investigational information about pharmaceutical agents that is outside U.S. Food and Drug Administration–approved labeling has been presented in this article.

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