The Economic Costs of Mental Illness & Benefits of Treatment

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Introduction

Mental illness imposes an enormous emotional and financial burden on individuals and their families. However, it also imposes costs on our state and nation in reduced or lost productivity (indirect costs) and in medical resources used for care, treatment and rehabilitation (direct costs). Because, it is estimated, about one in five adult Americans – or 44 million people – has a diagnosable mental disorder in any given year, and nearly the same proportion of children and youth, these costs are truly significant. Yet, with timely treatment, these costs are also increasingly avoidable. [Surgeon General’s Report on Mental Health, 1999] This short memorandum highlights some of the recent research on the economic costs of mental illness and cost-effectiveness of treatment.

The Prevalence of Mental Illness

Among adults. Epidemiological studies over the past two decades have demonstrated that mental illnesses are far more prevalent than was previously believed. The Epidemiologic Catchment Area Study [Robins & Regier, 1991], conducted in the early 1980s, and the National Co-Morbidity Survey [Kessler et al, 1994], conducted in the early 1990s, found that in any one year period, about 28% of Americans have symptoms that meet the diagnostic criteria for a behavioral health disorder (with 5.4% having a “serious mental illness” and 2.6% “severe and persistent” mental illness):

![Percent of Adults with Behavioral Health Disorder in One Year](image)

Moreover, it is estimated that -- over a lifetime -- almost one-third of the adult population has some type of mental disorder. [Robins & Regier, 1991]

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1 The review of the research presented here is illustrative, rather than exhaustive. In addition, though there is a similarly robust research literature on the cost-effectiveness of substance abuse treatment, this literature is not described.

2 Other analyses based on the National Comorbidity Survey have found that:
   - more than 13% of persons report suicidal ideation at some point in their lifetime, while 4% report making a suicide plan and 5% a suicide attempt. [Kessler, Borges, & Walters, 1999].

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Based on these studies, the Governor’s Blue Ribbon Commission on Mental Health estimated that in a one-year period about 597,500 Connecticut adults have symptoms that meet the criteria for mental illness and, of these, about 135,000 have serious mental illness and 66,000 severe and persistent mental illness. [Governor’s Blue Ribbon Commission on Mental Health, 2000].

**Among children and youth.** Although the prevalence of mental illness among children and youth are not as well documented as among adults, it is estimated that between 14% to 20% of all children and adolescents have some type of emotional or behavioral disorder, while the prevalence of severe disorder is about 7%. [Brandenburg, Friedman & Silver, 1990]. A review of 12 epidemiological studies published between 1987-1990 concluded that in a typical school of 1,000 students, between 180 and 220 students could be expected to have a diagnosable psychiatric disorder. [Doll, 1996]

More recently, a study of youth (ages 9 to 17) found that almost 21 percent had some evidence of a mental disorder with at least a minimal level of impairment. [Shaffer et al, 1996]. Indeed, there is some evidence of increasing psychological morbidity (particularly increases in the prevalence of major depression, substance abuse and the incidence of suicide) among adolescent populations. [Prosser & McArdle, 1996]

Based on these prevalence estimates, the Governor’s Blue Ribbon Commission on Mental Health found that 87,500 to 125,000 Connecticut child and youth have a diagnosable mental health condition. [Governor’s Blue Ribbon Commission on Mental Health, 2000].

**Use of Mental Health Services**

Despite the high prevalence of mental and addictive disorders, the majority of children and adults with such disorders go untreated.

**Among adults.** It is estimated that a total of about 15% of the adult population in the United States uses mental health services in a given year. Of these, slightly more than half have a specific mental or addictive disorder (8%), while the remaining receive care for a less severe mental health problem that does not qualify as a mental illness or addictive disorder. Given that 28% of the adult population has a diagnosable mental or substance abuse disorder and only 8% both have a diagnosable disorder and also receive treatment in one year, the Surgeon General’s Report concludes that a “substantial majority” of those with specific mental disorders do not receive treatment” – less than one in three. [Surgeon General’s Report on Mental Health, 1999]

**Among children.** Similarly, about 21% of children and youth receive mental health services in a given year (including 11% of children receiving such services through schools). Of these, slightly less than half (10%) had a diagnosable mental or addictive

- over any thirty-day period, about 3.6% of the United States labor force experiences major depression. [Kessler, Barber et al, 1999]
disorder, while the others had less serious conditions. Given that about one in five children and youth have a diagnosable mental or addictive disorder and only 10% receive treatment in a given year, at least half of all children and youth in need of mental health services are not receiving such services in a given year. [Surgeon General’s Report on Mental Health, 1999]

The Economic Costs of Mental Illness

Given the prevalence of mental health problems in children and adults, and the proportion of such problems going untreated, it is not surprising that the direct and indirect costs of mental illness are high.

Costs of mental illnesses overall. A number of studies have shown that psychiatric disorders not only exact substantial personal costs from the individuals who experience them, but also impose costs on their families and communities in terms of finances, role functioning, and quality of life. Psychiatric disorders have been demonstrated to have an impact on socioeconomic status\(^3\) (Faris & Dunham, 1939; Hollingshead et al. 1954; LaPouse et al. 1956; Michael & Langner, 1963; Turner & Wagenfeld, 1967; Eaton, 1980; Jayakody et al, 1998), to result in substantial direct and indirect financial costs\(^4\) (Harwood et al. 1984; Stoudemire et al. 1986; Wyatt & Clark, 1987; Rice et al. 1990; Klerman & Weisman, 1992) [17,27,39,46,58], and to have broader social consequences (Zeiss & Lewinsohn, 1988; Wells et al. 1989; Broadhead et al. 1990; Rhode et al. 1990; Coryell et al. 1993; Tweed, 1993).

In one of the first comprehensive analyses of its kind, the United States Department of Health and Human Services more than a decade ago estimated the economic costs of alcohol and drug abuse and mental illness. [Rice, Kellman, Miller & Dunmeyer, 1990]. *The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985* estimated the total cost of mental illnesses in 1985 to be $103.7 billion. Of this:

- $42.5 billion (41%) was for direct costs of treatment and support
- $47.4 billion (46%) for the indirect costs associated with mental illness morbidity (reduced productivity, missed work)\(^5\)

\(^3\) For example, early-onset psychiatric disorders have a direct negative effect on male employment and this effect is often as large as family background variables. Specifically, psychiatric disorders occurring in men before age sixteen have been shown to reduce educational attainment and the probability of being married, and to increase the probability of having a recent psychiatric disorder, each of which is a predictor of adult male unemployment. [Jayakody, Danziger & Kessler, 1998]

\(^4\) Direct costs include the expenses of treatment (e.g., medication, physician fees, hospitalization, nursing costs). Indirect costs include lost work time and productivity of the patient and the caring family member(s), lost income due to unemployment or underemployment of the patient, and personal and property losses resulting from the patient’s behaviors.

\(^5\) The Surgeon General’s Report notes that these indirect cost estimates are “conservative” because “they do not capture some measure of the pain, suffering, disruption, and reduced productivity that are not reflected in earnings.” (p.411). The Report also notes that the fact that morbidity costs comprise about 80% of the indirect costs of mental illness indicates “an important characteristic of mental disorders: Mortality is
• $9.3 billion (9%) for the indirect costs associated with more than million person years of life lost when nearly 40,000 persons died prematurely due to mental disorders

• $4.5 billion (4%) for other related costs (e.g., time spent by caregivers providing care to mentally ill family members, crime associated with mental illness, motor vehicle crashes, property destruction).

More recent analyses demonstrate continued a growth in costs.

**Direct costs.** In 1996, the United States spent about $69 billion, or more than 7% of total health spending ($943 billion), on mental health services. This sum does not include spending for mental health services provided by the human services sector. About 70% of the $69 billion spent in 1996 was for the services of specialty providers such as psychiatry hospitals, psychiatrists, psychologists, mental health clinics. [Surgeon General’s Report on Mental Health, 1999] Nearly half of private insurance spending on mental health care involves treatment for depression. [Frank, McGuire, Normand, & Goldman, 1999]

Between 1986 and 1996, spending for mental health treatment grew more slowly (7% annually) than did spending for health care overall (8% annually). As a result, spending for mental health care has declined as a percentage of overall health care spending. [Surgeon General’s Report on Mental Health, 1999]

In addition, the public sector is bearing a disproportionate and increasing share of these direct costs. Slightly more than half of the funding for mental health treatment in 1996 came from public payors (53% -- 19% from Medicaid, 14% Medicare, 18% other state/local, and 2% other federal), while the balance came from private payors (47% -- 27% from private insurance, 17% from individuals for out-of-pocket expenses such as for co-payments and uncovered services and 3% from other private). Moreover, while about 63% of the population had private insurance, private insurance covered only 47% of the direct costs for treating mental disorders, paying about $193/year per capita. By relatively low, onset is often at a younger age, and most of the indirect costs are derived from lost or reduced productivity at the workplace, school, and home.” [p. 411, citing Rupp et al 1998]
comparison, Medicaid covered 12% of the population but paid for 19% of the costs, about $481/year per capita. [Surgeon General’s Report on Mental Health, 1999].

**Indirect costs.** *The Global Burden of Disease*, a recent publication of the World Bank and the World Health Organization, reported on a study of the indirect (non-treatment-related) costs of mental disorders, quantified in Disability Adjusted Life Years (DALYs) (a metric of the burden of disability and premature death resulting from a full range of mental and physical disorders). The report found that in the United States, mental disorders together accounted for more than 15% of the overall burden of disease from all causes, and for slightly more than the total disease burden associated with all forms of cancer. In addition, major depression, bipolar disorder, schizophrenia and obsessive-compulsive disorder were identified as among the top 10 leading causes of disability worldwide. [Murray & Lopez, 1996]

A recent study by Ronald Kessler and Richard Frank of Harvard Medical School that examined the impact of psychiatric disorders on work loss days in major occupational groups in the United States labor force [Kessler & Frank, 1997] summarizes studies that have documented the indirect costs of mental illness as follows:

Among the most important of these results from a policy perspective are those concerning the effects of psychiatric disorders on lower rates of labour force participation, reduced work hours, and lower earnings (Bartel & Taubman, 1979; Benham & Benham, 1980; Broadhead et al. 1990; Frank & Gertler, 1991; Johnson et al. 1992; Greenberg et al. 1993; Conti & Burton, 1994; Stansfeld et al. 1995). The effects on reduced work hours are especially important in that they represent costs both to workers and to their employers. Data from the Epidemiologic Catchment Area (ECA) Study (Robins & Regier, 1991) suggest that these costs are substantial. Three per cent of men and 4.5% of women in the ECA reported that they had one or more days when they were unable to work or carry out their usual activities because of emotional problems during the past 3 months (Kouzis & Eaton, 1994).

Work impairments as common as these have enormous implications for the economy. For example, a recent analysis of the economic burden of depression, the psychiatric disorder thought to have the largest impact on work disability (Conti & Burton, 1994; Kouzis & Eaton, 1994), estimated that this disorder leads to an annual loss of $17 billion due to work absenteeism in the US alone (Greenberg et al. 1993). Given the existence of effective models for the management of this disorder in the workplace, such data suggest that it might be in the interests of employers to develop outreach programmes for their psychiatrically impaired employees and to broaden insurance coverage for these conditions.

One study of the prevalence and predictors of “emotional disability days” found that persons with the least education and those without private insurance had the most absences from work because of mental health problems (about 5% had a least one
emotional disability day in the prior three months). In addition, this study found that emotional disability days were particularly prevalent among persons with untreated depression and panic disorders. Specifically:

- Persons with a major depressive disorder were 27 times more likely to miss work than those without this disability and 44% of persons with depression reported at least one emotional disability day in the preceding three months (compared to 2% of the general population)

- Persons with panic disorders were 21 times more likely to miss work and 44% of persons with this disorder missed at least one day of work in the preceding three months.

Overall, depression was found to be associated with the largest number of absences (more than 9 missed work days over three months). This absence rate was greater than for many other mental and physical illnesses, excepting cancer and cardiovascular problems. [Kouzis & Eaton, 1994]

The Kessler and Frank study, which also examined the impact of psychiatric disorders on work loss days, critiqued the Kouzis & Eaton study for not taking co-morbidity into account, noting that comorbidity has been found to affect social functioning over and above the effects of the component disorders. Kessler & Frank found that:

- Across all occupations, 18.2% of employed workers had some psychiatric disorder in the past thirty days, though there was substantial variation in prevalence across occupations. Specifically, 3.7% of the workforce had co-morbid psychiatric disorders, 14.5% had a single psychiatric disorder, and 81.8% had no psychiatric disorder.

- The average prevalence of work days lost and work cutback days for reasons associated with mental health and substance use did not differ across occupations; overall, there were about 6 work loss days per month per 100 workers and about 31 days of work cutbacks per month per 100 workers.

- Among workers with a single psychiatric disorder, workers with affective disorders (2.1%) had a larger average number of work loss and work cutback days than any of the other single disorders: a total of 25 work loss days per month per 100 workers (4 million work loss days/year nationally) and 109 work cutback days per month per 100 workers (20 million work cutback days/year nationally).

- Work impairment was most strongly concentrated among the 3.7% of the workforce who had co-morbid psychiatric disorders. Workers with co-morbid affective, anxiety and substance abuse disorders had 49 work loss days and 346 work cutback days per month per 100 workers (equivalent to 15 million work loss days and over 110 million work cuts back days per year nationally). This compares to 11 work loss days and 66 work cutback days per month per 100
workers for worker with a single psychiatric disorder and 2 work loss days and 11 work cutback days per month per 100 workers for workers with no psychiatric disorders.

- While missed work days were similar across occupations, professionals had more work cutback days associated with the effects of psychiatric disorders. [Kessler & Frank, 1997].

**Economic burden of depression.** A number of studies have established the strong association between depression and work-related disability. [Wells et al 1988; Kessler & Frank 1997; Broadhead et al 1990; Druss, Rosenheck & Sledge 2000] In fact, depression is associated with a higher rate of short-term disability than virtually any other chronic condition and early intervention and treatment of workers for depression has been found to reduce the costs of hospitalization and long-term work disability. [Kessler, Barber et al, 1999]

A study of the annual cost of all types of depressive illnesses in the United States, including the costs associated with a reduction in productive capacity at work during episodes of depression, found that the annual costs of depression in 1990 totaled about $43.7 billion. [Greenberg et al, 1993] Of this total, about 55% ($23.8 billion) were indirect costs associated with reduced productivity at work, 28% ($12.4 billion) were direct costs for medical, psychiatric, and pharmacological care, and 17% ($7.5 billion) were mortality costs arising from depression-related suicides. This study noted that since some categories of cost had yet to be estimated (such as lost productivity of family members), the true burden of depression could be even greater.

A more recent study by three members of the faculty of the Departments of Psychiatry and Public Health at the Yale Medical School demonstrated the costs of depressive illness in a major corporation. [Druss, Rosenheck, & Sledge, 2000] Based on an analysis of 1995 health care cost and sick day data from a large manufacturing corporation employing about 23,000 individuals, these researchers found that employees with depressive illnesses incurred about $4,373 in annual health care costs, of which $1,341 on average was attributed to mental health costs. Total annual health care costs per employee for depressive disorders exceeded total annual costs per employee for employees with heart disease, hypertension, back problems, or diabetes. In addition, employees who filed at least one claim for depressive illness took an average of 9.9 annual sick days, significantly more sick days than were taken for any of these other conditions. The combination of depression with any of these other conditions was associated with total costs that were about 1.7 times greater than the costs for either condition alone. The researchers note that the corporation’s reduction in mental health benefits may have been one of the factors driving up health and disability costs in this study. [See Rosenheck, Druss, Stolar, Leslie & Sledge, 1999].

**Economic burden of anxiety disorders.** Anxiety disorders (e.g. panic disorder, posttraumatic stress disorder) also impose substantial costs that may be avoidable through greater awareness and timely intervention. One study estimated that the annual cost of
anxiety disorders in the United States in 1990 was about $42.3 billion, or $1,542 per sufferer. 54% of this cost was attributed to non-psychiatric treatment, 31% to psychiatric treatment, 10% to indirect workplace costs, 3% to mortality costs and 2% to pharmaceutical costs. The study found that all anxiety disorders, excepting simple phobia, were associated with impairment in workplace performance. Of the workplace costs caused by anxiety disorders, 88% were due to lost productivity at work, rather than absenteeism. [Greenberg et al, 1999]

Other Impacts of Untreated Mental Illness

The impact of untreated mental illness extend beyond missed days of work, work cutbacks, lost productivity and earnings and health care costs. Untreated mental illnesses have impacts on family formation and the well-being of the next generation.

On family formation. Young people with early-onset psychiatric disorders (before age 18) are more likely than other young people to marry early, have a disrupted marriage, have a child too early, get divorced and then either remain a single parent or a person who is married and divorced multiple times. If marriage and pregnancy can be postponed among these young people until after age 18, psychiatric problems appear to have less of an impact on family formation problems. [Kessler & Forthofer, 1999]

On children’s risk of mental illness. Children exposed to adversity in childhood, including parental psychopathology, loss events and interpersonal trauma are at greater risk when they reach adulthood for mood disorders, anxiety disorders, addictive disorders and acting out disorders. The impact of these childhood adversities on disorder onset persist beyond childhood, though they are most consistent and powerful with regard to early-onset disorders. [Kessler, Davis & Kendler, 1997; Kessler, Gillis-Light et al, 1997; Kendler, Davis, & Kessler, 1997]. For example:

- One meta-analysis of 17 studies from 1980-1993 found that when compared to children of parents with no mental disorders, children of parents with bipolar disorder were nearly 2.7 times more likely to develop a mental disorder of any kind, and 4 times more likely to develop an affective disorder. [Lapalme, Hodgins & LaRoche, 1997]

- A study of the relationship between parental substance abuse disorders and preadolescent psychopathology found that the youth were at greater risk of disruptive behavior disorders and anxiety disorders. Importantly, however, the risks transmitted were found to be more closely associated with a history of mental disorders in the parents’ childhoods than with the parents’ current substance abuse. Specifically, children whose fathers who had conduct disorder and oppositional defiant disorder as children were themselves far more likely to have disruptive behavior disorders, while children whose mothers had childhood anxiety disorder were far more likely to themselves have anxiety disorder, independent of current parental substance abuse. [Clark, Moss, Kirisci, Mezzich, Miles & Ott, 1997]
The Economic Benefits of Treatment

As noted in the Governor’s Blue Ribbon Commission Report on Mental Health:

Despite the widespread perception – based on stereotypes about long-term psychotherapy – that mental health treatments are unstructured and highly subjective, recent comparisons of the effectiveness of contemporary psychiatric treatments to other medical interventions have revealed surprisingly positive outcomes for the mental health field...New generations of medications for affective and psychotic disorders have been developed that are more effective, over a shorter period of time, and with fewer troublesome side effects. In addition, structured and disorder-specific psychosocial interventions have demonstrated efficacy in randomized controlled clinical trials. [p. 14]

“Success rates” for bipolar disorder are now about 80%, for major depression, obsessive-compulsive disorder, and panic disorder about 70% and even for schizophrenia, “long considered to be the most severe, debilitating, and refractory of all psychiatric disorders,” 60% – “a greater recovery rate than many of the chronic physical illnesses.” [Governor’s Blue Ribbon Commission Report on Mental Health, p. 14]

Timely and appropriate mental health treatment provides the obvious benefit of reducing morbidity and mortality and increasing work productivity among persons with mental illnesses, as discussed above. In addition, however, recent research suggests that effective treatment of mental illness may result in substantial savings in non-mental health costs. Conversely, restrictions on access to mental health services can increase costs for non-mental health services, as well as result in increased sick days.

One study, based on an analysis of data from two national surveys, estimated and compared the cost of short-term, depression-related work disability with the cost of successful depression treatment. [Kessler, Barber et al, 1999] The study found that depressed workers had between 1.5 and 3.2 more short-term work disability days in a 30-day period than other workers, with a salary-equivalent productivity loss averaging between $182 and $395. Assuming that effective pharmacotherapy for depression could be provided at a total cost of $402 per 30 depression-free days/worker, these researchers estimated that cost of treatment could be offset by 45% to 98% by savings in avoided the lost productivity associated with major depression. They noted, moreover, that the cost-effectiveness of encouraging depressed workers to obtain treatment was even greater than this for some employers for two reasons: a) their calculations ignored other costs of untreated depression to the employer; and b) employees, rather than employers, may bear the majority of health insurance costs over the long term in the form of wage adjustments. In comparison, “there is no evidence that mentally healthy workers within a given occupation can command higher wages by virtue of being mentally healthy.”
A study recently completed by faculty at the Yale School of Medicine examined the impact of cost-containment measures on health service use and costs at a large national manufacturing corporation. [Rosenheck, Druss, Stolar, Leslie, & Sledge, 1999] The researchers found the corporation’s cost-containment procedures (increased deductibles and co-payments followed by a switch to managed care with prior authorization and utilization review procedures) resulted in no change in the proportion of employees using mental health services, but a “highly significant and substantial 34 percent reduction in the number of days of outpatient mental health service use per patient per year” over the period 1993-1995 (from 13.9 days/patient/year in 1993 to 9.2 days/patient/year in 1995) and a significant decline (of 37.7%) in the total costs of mental health services per user. Importantly, however, this decline in mental health costs among mental health users was fully offset by their concurrent 36.6% increase in non-mental health service costs. In addition, the mental health users had a 21.9% increase in sick days.

These researchers concluded, “Savings in mental health care were offset by a concomitant increase in non-mental health service use and also were accompanied by an increase in sick days among mental health service users. It thus appears that in this corporation reducing mental health care was associated with potentially adverse consequences for employees with mental health problems, with no gain for the employer’s ‘bottom line.’ ”


During the early to mid-1990’s, many employers began to suspect that tightly limited mental health care benefits were contributing to higher psychiatric disability costs and productivity losses. Published studies confirmed their suspicions. A 1998 study by the UNUM Life Insurance Company and Johns Hopkins University found that employer plans with good access to outpatient mental health services have lower psychiatric disability claims costs than plans with more restrictive arrangements. Leading employers now play less emphasis on managing access to behavioral health care services and more on employee education, early intervention mechanisms, disability prevention, and return-to-work programs. (p. 7, citations omitted)

Early results from RAND’s Partners in Care (PIC) initiative provide further evidence of the efficacy of early and timely intervention. PIC is a real-world trial involving more than 27,000 patients, 125 health care providers and 46 primary care clinics within six nonacademic managed care practices across the nation. It is seeking to evaluate how two evidence-based quality improvement programs for treatment of depression, as implemented by managed, primary care practices with an only modest investment in resources, affect quality of care, health-related outcomes and employment. Results after

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6 Information about RAND’s Partners in Care quality-improvement programs are available through www.rand.org/organization/health/pic.products.
one year of follow-up showed that the quality-improvement programs significantly increased the rates of counseling and appropriate use of anti-depressant medication. Among patients initially not in treatment for depression, participants in the quality-improvement programs were about twice as likely to start treatment in the first six months of follow-up as were patients in care-as-usual clinics. Patients in the intervention programs were also 10 percentage points less likely to be clinically depressed over the year and reported better quality of life. Results from the employers’ perspective also have been positive. For patients employed when the study began, the programs promoted continued employment. Five percent more of the patients in the quality-improvement programs remained in the workforce at 12 months than did their care-as-usual counterparts. [Wells, 1999; Wells, Schoenbaum et al, 1999; Wells & Sherbourne, 1999; Wells, Sherbourne et al, 2000].

Implementation of new methods for using administrative data to comprehensively assess the value of mental health care will also help identify treatments that are cost-effective, and how successful we are in improving treatment rates over time. One such promising approach is the Systems Cost-Effectiveness framework developed and first applied by Richard Frank et al to acute-phase treatment of depression in a large insured population. Using the SCE approach, for example, Frank et al found that there are “a range of treatments for acute-phase depression, delivered in everyday clinical practice, that can be expected to produce substantial clinical effects efficiently” and that the “incremental cost of producing a depression-free case is $6,031.” Based on this analysis, Frank concluded that “this is a good deal in terms of how we spend our money on health care and other social projects.” [Frank, McGuire, Normand, & Goldman, 1999].

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