

The economic burden of depression and the cost-effectiveness of treatment

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ABSTRACT *Cost-of-illness research has shown that depression is associated with an enormous economic burden, in the order of tens of billions of dollars each year in the US alone. The largest component of this economic burden derives from lost work productivity due to depression. A large body of literature indicates that the causes of the economic burden of depression, including impaired work performance, would respond both to improvement in depressive symptomatology and to standard treatments for depression. Despite this, the economic burden of depression persists, partly because of the widespread underuse and poor quality use of otherwise efficacious and tolerable depression treatments. Recent effectiveness studies conducted in primary care have shown that a variety of models, which enhance care of depression through aggressive outreach and improved quality of treatments, are highly effective in clinical terms and in some cases on work performance outcomes as well. Economic analyses accompanying these effectiveness studies have also shown that these quality improvement interventions are cost efficient. Unfortunately, widespread uptake of these enhanced treatment programmes for depression has not occurred in primary care due to barriers at the level of primary care physicians, healthcare systems, and purchasers of healthcare. Further research is needed to overcome these barriers to providing high-quality care for depression and to ultimately reduce the enormous adverse economic impact of depression disorders.*

Key words: economic burden, depression, treatment, cost-effectiveness

The growing importance of the economic burden of depression

A large body of literature has documented that depression imposes a substantial burden on society (Zeiss and Lewinsohn, 1988; Wells et al., 1989; Broadhead et al., 1990; Rohde et al., 1990; Coryell et al., 1993; Tweed, 1993). Much of the earlier research has focused on the considerable personal cost that depression exacts from afflicted individuals, their families, and communities. These personal costs include significant clinical morbidity, increased mortality particularly from suicide, diminished functioning, and loss of quality of life (Harwood et al., 1984; Rice et al., 1985; Stoudemire et al., 1986; Jacob et al., 1987; Klerman and Weissman, 1992).

The most ambitious effort to date, the World Health Organization's (WHO) Global Burden of

Disease (GBD) study, quantified and compared the burdens imposed by diseases in terms of disability-adjusted life years (Murray and Lopez, 1996). The GBD study estimated that, world-wide, depression is the single most burdensome illness during the middle years of life (Murray and Lopez, 1996). Importantly, this result held true in both developing and developed nations. No other disease or condition accounted for even half the total burden imposed by depression.

In the past decade, research on the social consequences of depression has begun to focus on the economic costs. Reasons for this shift include a growing recognition of the sheer magnitude of this economic burden, as well as its significant contribution to the overall societal burden imposed by depression. Another important impetus has been the social policy debate that has recently occurred,

especially in the US, over the extent of health insurance coverage for mental disorders. Even in the most economically advantaged societies, difficult decisions need to be made on how to allocate limited healthcare resources. To inform such decisions adequately, epidemiologists, health economists, and policy analysts have combined their efforts to provide the necessary economic data for depression, including the costs of the illness and the cost-effectiveness of treatments for depression.

Magnitude and components of the economic costs of depression

Cost-of-illness research has tended to include several categories of costs in calculations of the overall economic burden imposed by particular disorders (Jarvinen, 1988; Greenberg et al., 1993). Firstly, direct treatment costs consist of resources spent on inpatient and outpatient treatments, partial hospitalization, and residential, pharmacological and other treatments. Secondly, indirect economic costs arise from any increase in mortality attributable to the illness, and thirdly, indirect economic costs arise from morbidity, particularly those that cause reductions in afflicted individuals' productive capacities.

A recent analysis of the economic burden of depression (Greenberg et al., 1996) estimated that annual costs total \$53 billion in the US alone. This analysis also revealed which types of costs are most responsible for this staggering economic burden. Reduction in work productivity due to depression accounted for the clear majority (\$33 billion annually). On the other hand, direct treatment costs accounted for a much smaller proportion (\$12 billion annually), as did the economic costs from increased mortality (\$8 billion annually, due to suicide) (Greenberg et al., 1996). Estimates of lost work productivity due to depression were further broken down into relevant subcomponents, including losses due to depression-related absenteeism (\$24.5 billion annually) and depression-related impairment while at work (\$8.5 billion annually) (Greenberg et al., 1996).

These figures are likely to underestimate the true economic costs to society for several reasons (Greenberg et al., 1993). Such analyses are based on a human capital model (assigning a value to life that is based on the productive contribution a person makes to society), which places no social value on the contributions of individuals not employed in the labour market, such as children, those engaged primarily in

non-wage household work, and elderly retirees. Furthermore, non-monetary costs such as pain, suffering, decrements in quality of life, informal care or other family burdens, and effects on long-term life trajectory (such as lower educational attainment, higher rates of teenage pregnancy, and so on) due to depression are not accounted for. Although alternative methods, such as those based on how much individuals would pay to avoid depression (a 'willingness to pay' approach) would more accurately account for economic burdens in excess of one's wages, such approaches are difficult to implement in practice.

Why are the economic costs of depression so large?

Several reasons help to explain why the economic burden of depression is so large. Depression is among the most commonly occurring chronic diseases in both the labour force and the general population (Eaton et al., 1990; Kessler et al., 1994). In many countries, this already high prevalence has been increasing even further in more recent cohorts. Moreover, depression is associated with substantial loss in productivity, much of which results from the fact that depression has an earlier age of onset (typically late 20s) than other common diseases affecting individuals before or during their prime working years. The chronicity of depression and its deleterious effects on educational and professional attainment further add to this substantial loss in productivity (Kessler et al., 1995). Furthermore, despite the availability of effective treatments that lead to improved clinical and work outcomes, only a minority of people with depression receive adequate treatment (at an appropriate dosage, for sufficient duration). The following sections review the evidence behind the above points.

The high prevalence of depression and associated impairments in the labour force

Epidemiological surveys carried out in the general population have consistently found that depression and associated work impairment are very common in the labour force. The Epidemiologic Catchment Area (ECA) study found that, among employed respondents, 44% with recent major depression missed one day or more of work due to emotional problems in the previous three months (Kouzis and Eaton, 1994). Respondents with major depression were over 27 times more likely to experience work loss due to emotional problems than respondents with none of the disorders

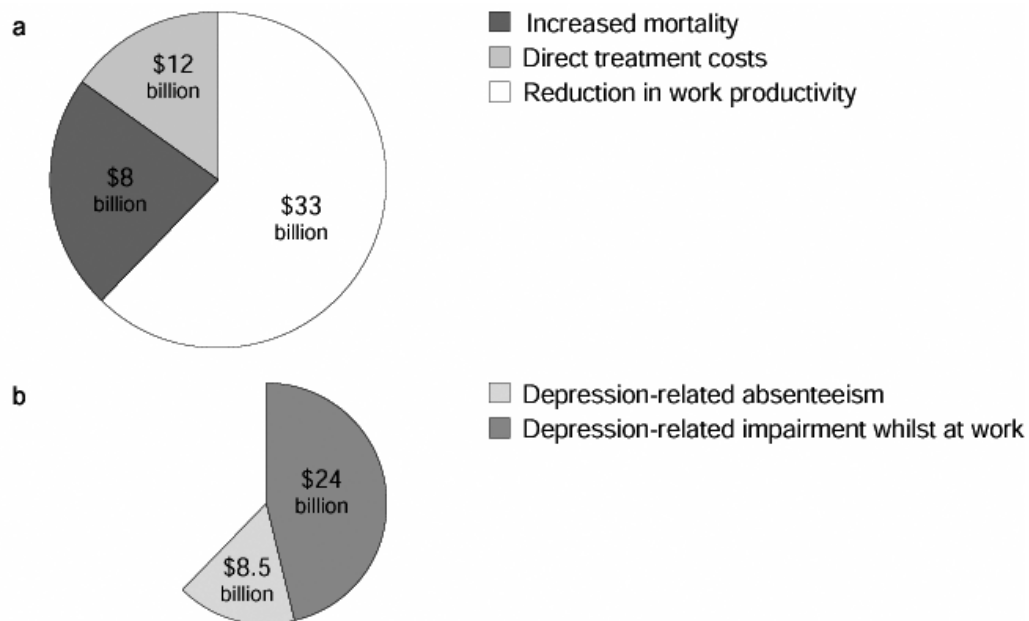


Figure 1. a) The economic burden of depression, with an estimated total annual cost of \$53 billion. b) Reduction in work productivity.

(defined in the Diagnostic and Statistical Manual of Mental Disorders) assessed in the survey. Depressed respondents were more likely to report work loss than those with any other mental disorder. In an analysis of the National Comorbidity Survey (NCS) (Kessler and Frank, 1997) major depression was associated not only with a significant risk of sickness absence days but also work cut-back days (when the respondent was at work but performing poorly). Similar results were reported from a national survey carried out by the MacArthur Foundation in 1997 (Kessler et al., 2001). Major depression was found to be one of the five most impairing disorders in the US in terms of work loss and work cut-back, and of the five disorders, major depression was by far the most prevalent (Kessler et al., 2001). Recent data from the Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System (Centers for Disease Control and Prevention, 1995) on condition-specific, 30-day activity limitations also found that a composite category of ‘depression, anxiety, or other emotional problems’ is one of the most impairing conditions among respondents over 18 years of age in the general population.

Results from an additional general population study are important because of concerns that depressed

mood might lead to greater pessimism in respondents and therefore bias in self-reports of performance (Morgado et al., 1991). In addition to collecting self-reported data, investigators collected information about the work performance of the focal respondent from a collateral rather familiar with the respondent’s recent work performance (Martin et al., 1996; Caplan et al., 1984). The investigators found that these externally rated measures of work performance were significantly correlated with self-reported measures.

Primary care samples have also been studied (Wells et al., 1989; Leader and Klein, 1996; Tollefson et al., 1993). In the WHO Collaborative Study of Psychological Problems in General Health Care (Sartorius and Ustun, 1995), a naturalistic survey of 25,000 primary care patients in 14 countries, 48% of respondents with current major depression reported moderate or severe occupational role impairment, with an average of 7.7 days of work impairment in the past month (Ormel et al., 1994).

Evidence that work impairments respond to improvement in depression severity

The considerable economic burden associated with depressive illness, particularly from lost work productivity, raises the question ‘to what extent is it worth

treating depression?' This question has several subcomponents, including:

- To what extent does improving depression symptom severity have any impact on important cost-drivers, particularly work impairment?
- What is the evidence that treatments result in economic gains, especially through improved labour outcomes?
- How do any economic benefits from treatment compare with the added direct costs of depression care?

Do work impairments respond to improvements in depression severity?

In the NCS (Kessler and Frank, 1997), compared with respondents who were never depressed, those whose depression had remitted no longer had significant increases in either sickness absence or work cut-back. This result provides some indirect evidence that the lost productivity associated with depression does improve when the depressive episode remits.

This issue has also been studied in longitudinal naturalistic studies (Ormel et al., 1990, 1991, 1993; Von Korff et al., 1992; Hays et al., 1995) which examined the synchrony of change between severity of work impairment and severity of depression symptoms. These studies have consistently found that changes in severity of depression and changes in severity of work impairment occur fairly synchronously. Untreated depressed patients, who were high utilizers of general medical healthcare resources, were followed up over a period of 12 months (Von Korff et al., 1992). Observations showed that patients who failed to improve during this follow-up period also had high levels of work impairment that did not change significantly between baseline and the end of the follow-up period. In contrast, those with severe depression at baseline who improved over the follow-up period also exhibited a 36% reduction in their work impairment during this period (from 79 to 51 impairment days per year); respondents with moderate depression at baseline, who improved, exhibited a 72% reduction in the number of work impairment days (from 62 to 18 days per year). Similar patterns of synchronous change between depression symptom severity and work impairment severity have also been reported in studies of primary care samples (Ormel et al., 1990, 1991, 1993). It is worth pointing out that all of these

synchrony-of-change studies assessed work impairment through patient self-reports. Although methodological research (Revicki et al., 1994), including our own unpublished results of a MacArthur Foundation-funded calibration study, has documented good consistency between self-reports and objective ratings of work performance, use of self-reports may still represent a possible limitation. For this reason, a longitudinal, naturalistic study of the synchrony-of-change in depression and work functioning is of particular interest (Berndt et al., 1998). This study employed bi-weekly objective productivity records on a large sample of insurance claims adjusters collected over several years. The investigators merged this information with health insurance claims data from the same time period to examine whether productivity declined during episodes of illness (defined by use of outpatient treatments). They reported that productivity dropped substantially in the six months prior to the onset of treated episodes of depression (Berndt et al., 1998). The investigators also reported that the decline in productivity improved over the course of treatment. Another important finding from this study showed that the indirect costs from lost productivity were substantially greater than the direct costs of treatment, raising the intriguing possibility that treating depression might actually be cost-saving.

Does treatment of depression lead to improved productivity?

Although results from the time series reviewed above suggest that depression treatment is cost effective, the potential for confounding in naturalistic studies prevents this conclusion being drawn. For example, it is plausible that unmeasured variables, such as difficulty getting along with supervisors, leads to both depression and work impairment. Investigators have attempted to deal with this possibility by examining the synchrony-of-change in depression severity and change in work impairment using data from uncontrolled clinical studies. In a secondary analysis of six studies carried out in the 1980s, reports indicate that patients experiencing remission of depression exhibited significantly less serious work impairment than patients not considered to be remitters (Mintz et al., 1992). A greater proportion of patients showed improvement in serious work impairment following longer duration of treatment. However, remission of serious work impairment lagged behind improvement

of depression symptoms. Furthermore, the association between severity of depression symptoms and serious work impairment was greatest at moderate to high levels of depression severity (Mintz et al., 1992). Follow-up data from several studies showed that relapse of depression was associated with a return of serious work impairment.

Other recent uncontrolled clinical studies (Weissman et al., 1978; Bergner et al., 1981; Kocsis et al., 1988; McHorney et al., 1994; Barge-Schaapveld et al., 1995; Friedman et al., 1995; Finkelstein et al., 1996; Mauskopf et al., 1996; Berndt et al., 1998) have also generally reported significant synchrony between change in depression severity and change in work functioning. In contrast, synchrony has not been observed in some uncontrolled clinical studies (Barge-Schaapveld et al., 1995; Friedman et al., 1995), although these studies have either been of short duration (Barge-Schaapveld et al., 1995) or involved patients with mild depression severity (Friedman et al., 1995). The lack of synchrony in these studies may be explained by the findings of Mintz et al. (1992), who reported that associations between depression severity and work impairments increase with the duration of treatment and with increasing symptom severity. Finally, it is also worth pointing out that the strength of synchrony in recent studies has been as great when subjective measures of work performance have been employed (Finkelstein et al., 1996; Berndt et al., 1998) as when more objective measures have been used, such as frequency of absenteeism (Simon et al., 1998a) or clinician ratings (Mauskopf et al., 1996).

Does treatment of depression improve productivity above and beyond no treatment?

Results from the uncontrolled studies reviewed above cannot rule out the possibility that the improvements observed in productivity were simply due to placebo effects and not actually from treatments themselves. To distinguish between these possibilities requires placebo-controlled clinical studies. Several such studies exist that have reported significant separation between treatment and placebo groups on self-reported measures of work impairment. Results from four placebo-controlled clinical studies carried out in the 1980s have all reported significant benefit of treatment on reducing serious work impairment compared with a placebo (Mintz et al., 1992). Subsequent placebo-controlled clinical studies have

reported similar results in patients with major depression (Mynors-Wallis et al., 1995), early onset primary dysthymia (Kocsis et al., 1997), and chronic depression (Agosti et al., 1991).

The importance of ‘effectiveness’ research

Although the above results suggest that depression treatments are efficacious in terms of work impairment, they can be criticized for their potential lack of external validity. Randomized, controlled clinical trials (RCTs) are conducted among patient samples that are unrepresentative of the patients seen in the community because of strict exclusion criteria. In addition, the highly controlled conditions in RCTs are atypical of the usual regimens and routine conditions in ‘real-world’ practice settings. The most serious potential concern is that typical depression care is far less effective than that in RCTs because ‘real-world’ treatments are initiated far less frequently, applied with much lower intensity and follow-up, or accompanied by a substantially greater premature drop-out rate.

Epidemiological data on the quality of depression treatments in the community has consistently supported the plausibility and seriousness of these concerns. As early as the 1980s, investigators in the National Institute of Mental Health-Clinical Research Branch Collaborative Program on the Psychobiology of Depression Study reported that only a minority of depressed patients received adequately intensive treatment, both in the community prior to the study (Keller et al., 1982) and, surprisingly, even after entering the Collaborative Depression Study (Keller et al., 1986). In the past decade, newer classes of antidepressant medications with potentially greater tolerability have become widely available and are largely responsible for a substantial increase in the proportion of depressed individuals initiating pharmacotherapy (from 37.3% to 74.5% between 1987 and 1997) (Olfson et al., 2002). In spite of the increase in the proportion of depressed individuals receiving treatment, recent nationally representative data from the second half of the 1990s indicates that only 17% (Wang et al., 2000) to 30% (Young et al., 2001) of patients currently receive treatment for depression that meets minimal standards of adequacy. Critics might rightfully argue that these figures are not of concern if low intensity treatments are generally restricted to patients with mild or unimpairing

disorders who do not need care (Narrow et al., 2002). However, results from several studies argue against this possibility. Even among the subgroup of individuals in the NCS with the most serious occupational and social impairments from their mental disorders, fewer than half received any treatment in the previous year (Kessler et al., 2001) and only 15% received treatment that met minimal standards of adequacy (Wang et al., 2002). These findings of widespread poor-quality treatment for depression in the 'real world' are a cause for concern because a growing body of literature (Katon et al., 1995, 1996; Wells et al., 2000) suggests that, in order to be effective, depression treatments must conform with evidence-based recommendations (Agency for Health Care Policy and Research, 1993; American Psychiatric Association, 2000) concerning modality, intensity, duration, and follow-up.

A new generation of treatment-effectiveness studies for depressive disorders, initiated in the early 1990s, has sought to correct the problem of external validity. These studies involve randomization but they also replicate the naturalistic practice conditions in usual care settings. Effectiveness studies conducted to date have focused on primary care settings based on the fact that the majority of treatment for depression occurs in primary care settings (Regier et al., 1993), as well as the fact that the quality of treatment for depression in primary care is often particularly low (Wells et al., 1994, 1996). In addition to identifying effective interventions with lasting outcomes, a common goal in these effectiveness studies has been to work with existing primary care resources and structures to create feasible quality improvements that can then be widely disseminated. Katon and his colleagues at Group Health Cooperative (Katon et al., 1995, 1996) pioneered the development of a collaborative care model of treatment for depression in primary care. Key components of this multifaceted intervention included patient education, collaboration between an onsite psychiatrist and the primary care physician, and surveillance of patient outcomes and medication adherence (Katon et al., 1995, 1996). Subsequent effectiveness studies have further developed and refined intervention components, both to enhance their feasibility and to identify optimal levels of intensity that balance the desire for effectiveness with that of widespread acceptance and uptake. For example, Katon et al. (1999) developed a subsequent model of stepped collaborative care for those with

persistent depression. Several investigators examined interventions built on telephone-based treatment coordination by a trained non-physician (Hunkeler et al., 2000; Katzelnick et al., 2000; Simon et al., 2000). Recent effectiveness studies have developed primary care quality improvement strategies for use in the majority of managed care settings that fall outside the staff model health management organizations (HMOs) employed in earlier effectiveness studies (Rost et al., 2000; Wells et al., 2000).

Results from these effectiveness studies have consistently documented that patients receiving enhanced care for their depression have significantly improved clinical outcomes compared with those receiving usual care (Katon et al., 1995, 1996; Katon et al., 1999; Katzelnick et al., 2000; Simon et al., 2000; Wells et al., 2000). However, results concerning the effects of enhanced treatment for depression have been controversial, particularly for those specifically measuring work outcomes. In a re-analysis of data from two effectiveness studies, subjects randomized to intervention tended to show greater improvement in functional impairment and lost productivity compared with controls (Simon et al., 1998b), however, these differences did not reach statistical significance (Simon et al., 1998b). The authors speculated that the results may have been due, in part, to the relatively short duration of the acute-phase intervention and of the follow-up period (four to seven months). The improvement in occupational functioning typically lags behind improvements in depressive symptoms, and sustained remission of depression may be necessary to achieve good occupational outcomes (Mintz et al., 1992).

Results from a long-term intervention study may provide partial confirmation of these possibilities (Wells et al., 2000). Indeed, patients in the intervention group received enhanced treatment in both the acute and continuation phases (lasting six months) and were followed up at six and 12 months (Wells et al., 2000). Among patients initially employed, the proportion still working in the intervention arm became significantly greater than the proportion in the usual care arm by 12 months of follow-up (Wells et al., 2000).

The cost-effectiveness of treating depression

The data reviewed above indicate that treating depression has economic benefits, especially in terms of improved labour outcomes. Indeed, the management

and treatment of depression clearly add to the direct treatment costs, and have the potential to be substantial. To determine the net costs versus the benefit of treating depression, formal economic analyses are required (Woods and Baker, 2002). Investigators most commonly use data from RCTs to estimate the efficacy, benefits, and costs associated with treating depression, either through direct observation of particular studies or through decision analytic simulations. However, as described above, data from RCTs that are conducted under highly controlled conditions and among atypical patients may not apply to the typical populations, the usual regimens, and the treatment practices in routine primary care. For this reason, the potential lack of external validity is a significant limitation of most cost-effectiveness estimates based on RCT data. Some cost-effectiveness analyses have employed data drawn from administrative claims databases to better estimate the efficacy and costs of depression treatments in routine practice. However, such cost-effectiveness estimates are highly vulnerable to selection bias, due to the non-randomized, observational nature of the data sources.

For these reasons, economic analyses based on recent effectiveness studies of interventions for depressive illness may be the most relevant source of information for answering questions concerning the net value of treating depression. Simon et al. (2001a) calculated the treatment costs of a depression-free day in their primary care effectiveness study and showed that the incremental cost was only \$21.44 per depression-free day. While the interventions used in other primary care effectiveness studies (Katon et al., 1995, 1996; Schulberg et al., 1996; Coulehan et al., 1997; Lave et al., 1998; Von Korff et al., 1998; Katelnick, 2000; Simon et al., 2001a, b; Schoenbaum et al., 2001) have varied in terms of their levels of intensity and costs, generally comparable results have been observed across all studies, ranging from approximately \$10 to \$35 per depression-free day (Schulberg et al., 1996; Coulehan et al., 1997; Lave et al., 1998; Simon et al., 2001a, b; Von Korff et al., 1998; Schoenbaum et al., 2001).

Could there actually be cost savings from treating depression?

Observational studies have consistently reported an association between depression and high utilization of general medical services (Simon and Katelnick,

1997). Such non-experimental findings raised hopes that any added costs of enhanced treatment for depression would be more than outweighed by large cost savings from lower utilization of medical services (a 'cost offset'). Many also hoped such cost offsets could serve as a powerful economic impetus for improved treatment of depression. However, economic analyses of the primary care effectiveness studies reviewed above consistently failed to show that interventions were the 'dominant' strategy (while interventions led to greater effectiveness than usual care, they also led to generally higher overall costs) (Katon et al., 1995, 1996; Schulberg et al., 1996; Lave et al., 1998; Von Korff et al., 1998; Katelnick et al., 2000) – at most, enhanced care of depression led to a *partial offset* in which the greater cost from utilization of treatments for depression among intervention patients was only somewhat offset by reductions in utilization of general medical services for non-depression-related conditions. The implication of these findings is that the large cost-offsets anticipated, based on earlier observational data, may not be the critically important policy lever for enhanced treatment of depression that was expected.

However, it is also important to point out that economic analyses of previous effectiveness studies have failed to consider important benefits of enhanced depression treatment. Perhaps the most important omission, given that the majority of the economic burden of depression is from lost work productivity, is consideration of the benefits of treatment on work impairment. Nevertheless, what is apparent from these effectiveness studies is that the range of incremental treatment costs per depression-free day falls well below the average daily salary of a typical worker, raising the real possibility that treating depression may still be cost saving (Schulberg et al., 1996; Coulehan et al., 1997; Lave et al., 1998; Von Korff et al., 1998; Schoenbaum et al., 2001; Simon et al., 2001a, b).

Data from two nationally representative general population samples of workers were used in an attempt to make a crude lower bound estimate of the possible workplace cost savings associated with treatment of depression. The analysis was based on the data derived from the relationship between severity of depressive symptoms and short-term work loss, and work cut-back (Kessler et al., 1999). Information on respondent earnings was used to assign dollar values to reports of work loss cut-back, and instrumental variable methods

were used to estimate the impact of change in depression symptom severity on change in the salary-equivalent dollar value of work impairments. Simulations based on meta-analyses of clinical studies were then used to estimate the likely effects of standardized treatment for depression on dollar-value reductions in work loss and work cut-back mediated by a decrease in symptom severity. Results suggest that treatments with effect sizes on symptom severity in the range found in effectiveness studies lead to average decreases in work loss and work cut-back of between \$1,100 and \$1,800 salary-equivalent value over the year of treatment per treated worker (not per successfully treated worker) (Kessler et al., 1999).

It is important to remember that these estimates are conservative; they do not take into consideration cost savings of treatment associated with fringe benefits, replacement costs, or decreased profitability. Furthermore, the results focus exclusively on workers with short-term disability. Even with these exclusions, estimated cost savings clearly exceed the average treatment cost of depression. However, these data should not be interpreted as proof that treatment is cost saving, due to the possibilities of selection bias, reciprocal causation, unmeasured confounding in the econometric models, and self-report bias in short-term disability reports. These preliminary calculations demonstrate that it is plausible to assume that treatment for depression might lead to indirect cost savings in workplace performance that substantially offset, if not exceed, the direct costs of treatment.

Future research needs and directions

Depression is clearly associated with enormous economic burden, the largest component of which derives from lost work productivity. Although efficacious and tolerable treatments exist, the widespread inadequate, and insufficient use of treatment of patients with depression compounds the economic burden of depression. Enhanced care of patients with depression is needed and should include as core features aggressive outreach and improved quality of treatments. Many existing primary care models of enhanced care of depressed patients, which involve collaboration with mental health specialists or non-physician care managers, have already been shown to be effective in clinical terms (Katon et al., 1995, 1996, 1999; Katelnick et al., 2000; Wells et al., 2000; Simon et al., 2001b) and in some cases on work performance

(Wells et al. 2000).

Until now, research on improving the quality of treatment for depression has focused almost exclusively on primary care. Despite the consistently positive findings in effectiveness studies, reluctance to implement enhanced treatment programmes for depression in primary care appears to be widespread. For example, following an invitation to implement a programme that required the participation of two primary care doctors, one nurse, and one administrative staff member in each practice, only seven out of the 102 practices originally approached agreed to participate (Rost et al., 2000). An additional 306 practices were subsequently approached in order to achieve the set of 12 practices required for the research (Rost et al., 2000). Such findings raise enormous concerns, not only about the external validity of effectiveness research studies but more importantly, the feasibility of implementing primary care quality improvement programmes.

Investigators have begun to elucidate the reasons for this reluctance to implement enhanced treatment programmes for depression in primary care. One critically important impediment at the physician level is that of competing demands, in which the limited time and resources of primary care doctors must be spent attending to general medical care as well as mental illnesses (Klinkman, 1997; Williams, 1998). A second, often-neglected impediment at the healthcare system level is that of competition between quality improvement programmes. Enhanced treatment programmes for depression must compete with other disease specialty programmes designed to improve the detection and treatment of conditions such as arthritis, asthma, diabetes, lower back pain, migraine headaches, seasonal allergies, and urge incontinence. Even the most innovative practices can only participate in a fraction of such programmes. Moreover, the current uncoordinated cross-marketing of quality improvement programmes is likely to deter widespread adoption of any of these programmes, including programmes for depression. A third impediment to implementation of enhanced programmes for depression care occurs at the level of the purchasers. Efforts have been made to encourage employers to engage in 'value-based purchasing' of healthcare (purchasing services from plans or programmes that deliver the highest quality care), including the development of common metrics to rate the quality of care

(for example, Health Employer Data Information Set [HEDIS], Consumer Assessment of Health Plans Study [CAHPS]) (National Committee for Quality Assurance, 1997; Crofton et al., 1999). Unfortunately, this movement has not been successful in motivating employers to purchase high-quality care for depression, partly because the metrics developed to monitor quality of care fail to inform employers what their return on investment (ROI) would be if enhanced care for depression is purchased.

Several research efforts currently under way are designed to overcome these barriers to the adoption of enhanced programmes for depression treatment. The new Robert Wood Johnson Foundation initiative seeks to address the lack of widespread adoption of enhanced primary care treatment programmes for depression in the US by designing and evaluating innovative incentive programmes for primary care doctors to detect and treat patients with depression. The challenge for adoption will be to motivate managed care plans to implement these incentive structures. This, in turn, will hinge on the creation of demand for these incentive structures on the part of payers.

A second programme, the Harvard Health Performance Initiative, is currently under way with pilot funding from the MacArthur Foundation and recent support from the National Institute of Mental Health. This initiative seeks to deal with the current barriers to enhanced care for depression in a number of ways. Barriers at the primary care physician level, such as competing demands, will be addressed by focusing on specialty behavioural healthcare treatment. Over 100 million people in the US are currently covered by a health plan that includes a mental health carve-out. Unlike primary care doctors, the mental health specialists who deliver services in carve-outs do not experience competing demands for their attention from non-mental disorders. Similarly, enhanced treatment programmes for depression face no competition for implementation from the host of quality improvement programmes for general medical conditions. On the contrary, most behavioural healthcare companies have an interest in increasing the number of people with mental disorders who are detected and treated because they are often paid per patient rather than through capitated contracts.

Another critical component of this initiative seeks to address barriers at the purchaser level by creating

competitive pressure for high quality care for depression through employer demand. Creating this purchaser demand requires the establishment of a strong business case that enhanced treatment for depression has a positive impact on the outcomes most relevant to employers, such as sickness absence, job performance, job-related accidents, turnover, and return on investment. For this reason, the Harvard initiative will conduct an analysis of the cost-effectiveness of enhanced care for depression, explicitly from the perspective of the employer and accounting for effects on work outcomes. Economic analyses of primary care interventions have already shown that enhanced care for depression can be highly cost-effective relative to usual care, despite omitting the potentially enormous savings from improved work performance. Such findings suggest that the workplace cost savings of treatment will be large enough to approach, if not exceed, the direct costs of treatment.

Results from these and other ongoing research efforts are critically needed by a variety of stakeholders. Public policy and health plan managers need such information to decide how mental healthcare delivery systems should be optimally reorganized and which innovative programmes of outreach and quality improvement should be developed and offered. Purchasers of healthcare benefits, such as large corporate benefits managers, also require such information if they are to truly make value-based purchasing decisions. Such decisions clearly need to be informed by rigorous research data if the enormous economic burden imposed by depression is ultimately to be alleviated.

Acknowledgements

Preparation of this chapter was supported, in part, by NIMH grants K01-MH01651 (to Wang), K05 MH00507 (to Kessler), the John D. and Catherine T. MacArthur Foundation Initiative on Depression and Workplace Performance, and an unrestricted educational grant from Wyeth Pharmaceuticals as part of the Global Research on Anxiety and Depression Network (GRAD) through an unrestricted educational grant by Wyeth-Ayerst Pharmaceuticals.

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