# The Costs of Depression: Direct and Indirect; Treatment Versus Nontreatment

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Depression is one of the most costly illnesses in the United States today. While managed care often focuses on the costs of treatment, the costs of nontreatment are usually ignored. We have potent treatments that are highly successful, but depression is often undetected or undertreated where it appears most commonly—in the primary care setting. When comorbid with other medical problems, especially cardiovascular disease, depression greatly increases mortality, morbidity, and expense. Sophisticated pharmacoeconomic analyses can guide our cost/benefit studies, but the real cost savings and highest quality care will come by investing in educating primary care physicians regarding the recognition and treatment of psychiatric illness as it presents in their clinical practices.

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Depression is a serious illness in the United States. It is a relatively high-prevalence disorder (occurring at a rate of 5%–10% in women and 2%–5% in men),[1] has clear diagnostic clinical criteria, and is eminently treatable by an array of potent pharmacologic and psychological methods. It causes severe functional disability, more severe than four of the five other chronic illnesses recently studied by RAND/UCLA in the Medical Outcomes Study.[2] Untreated, depression appears significantly to decrease life expectancy,[3,4] and when comorbid, it affects the mortality, morbidity, and costs of other medical illnesses.[5–7] It is also underdiagnosed and often undertreated in a primary care physician's office, where it most often first presents. As cost consciousness has affected clinical medicine, many investigators have attempted to discover the true costs of treating depression.[8,9] In this paper I will consider the various costs of treating and of not treating depression, so that a consistent methodology of cost determination may help inform our training and clinical decision making (Figure 1).

The prevalence rates of the Epidemiologic Catchment Area study reveal that the financial impact of major depression is enormous. In fact, depression is one of medicine's most costly illnesses. A recent study estimated its cost at more than $43 billion annually[10] by combining direct costs, such as inpatient and outpatient care and pharmaceuticals, with lost productivity, missed work days, and lost lifetime earnings. This figure is probably extremely low due to (1) underdiagnosis, (2) use of expensive medical resources when searching for the right diagnosis, and (3) increased medical morbidity, since underdiagnosed depression will worsen many illnesses.[7,11,12] Wells et al., in a study of over 40,000 patient visits, found depression to cause more functional disability than diabetes, chronic lung disease, hypertension, or arthritis on six variables of functionality and to cause disability equal to or greater than coronary artery disease on two of six.[2] Functional disability causes lost productivity, decreased self-esteem, and more medical visits and costs (Figure 2).

## THE PRIMARY CARE SETTING

Various clinicians and researchers have noted two intersecting facts: (1) depression is underdiagnosed in primary care, and (2) up to 50% or more of patients who present in primary care have no diagnosable medical illness. Kroenke and Mangelsdorff[13] studied the 10 most common complaints of patients (N = 1000) visiting primary care physicians over 3 years and compared their symptoms to the number in each category for which a diagnosis could be made. They found that a high proportion of the 5 most common symptoms presented—chest pain (89%), fatigue (87%), dizziness (82%), headache (90%), and edema (64%)—could not be identified as caused by an organic illness. The percentages of the 5 next most common symptoms that could not be traced to a known organic cause were even higher in most cases: back pain (90%), dyspnea (76%), insomnia (97%), abdominal pain (90%), and numbness (81%). It is reasonable to assume that a large percentage can be attributed to the large disparities be-

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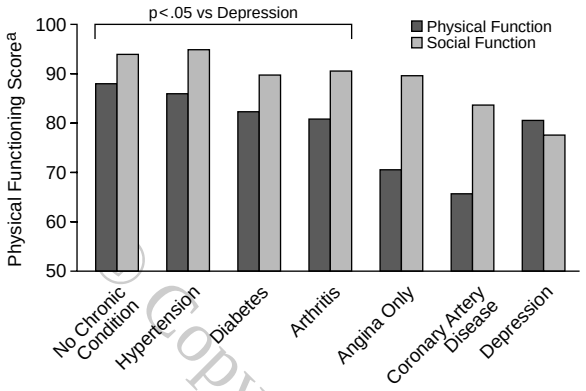
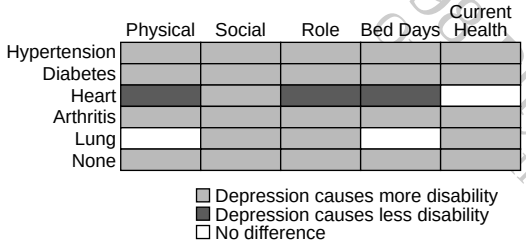
Figure 1. Physical and Social Functioning in Depression and Chronic Illness*




*Adapted from reference 2, with permission.
[a]A score of 100 = perfect functioning.

Figure 2. Depression vs. Chronic Medical Conditions as Cause of Disability in Daily Functioning*



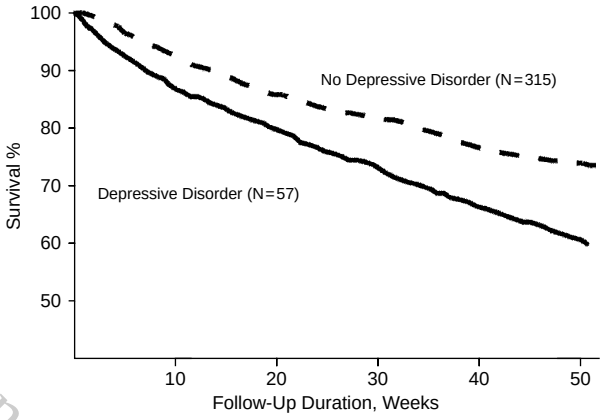

*Adapted from reference 2, with permission.

Table 1. Lifetime Mental Disorders of Distressed High Utilizers (N = 119)*

| Mental Disorder | Percent |
|---|---|
| Major depression | 68 |
| Dysthymia | 32 |
| Panic disorder | 22 |
| Generalized anxiety disorder | 40 |
| Somatization disorder | 20 |
| Alcohol abuse/dependence | 24 |
| Any lifetime disorder | 86 |

*From reference 14, with permission. Presence of lifetime mental disorders assessed using the Diagnostic Interview Schedule.

Figure 3. Probability of Survival Over 1 Year for Depressive Disorder and Nondepressed Nursing Home Patients*




*From reference 16, with permission.

tween the number of symptoms diagnosed as stemming from a recognized medical illness and those for which no confident diagnosis could be made to undiagnosed psychiatric illness, primarily depression and anxiety disorders.

We might speculate about the funds spent on patient workups in pursuit of an elusive diagnosis. It seems likely that these undiagnosed patients left unsatisfied and returned to their physicians in the hope of finding relief from their symptoms. Indeed, Katon et al.[14] and Simon[15] found in two studies that overutilizers of medical case services have a high incidence of psychiatric diagnoses and that 68% of these patients had a lifetime incidence of depression (Table 1). In addition, Jonsson and Bebbington found that comorbid depression greatly increased the number of visits for patients with other medical illnesses. Their studies of inpatient medical care have shown, in addition, that untreated comorbid depression adds as much as 1.2 extra days to a hospital stay, creating increasing expenses not usually measured as costs of depression.[9]

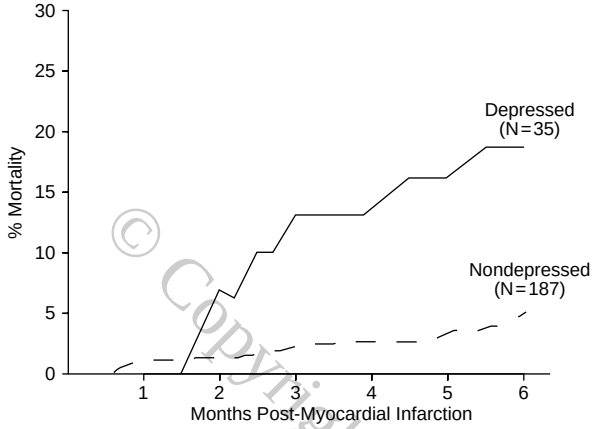
## DEPRESSION AND COMORBIDITY

But even after leaving the hospital, depressed patients continue to be adversely affected by their undiagnosed condition, with a much higher mortality and morbidity rate than nondepressed patients. Rovner et al.[16] studied 372 nursing home patients and found that the survival rate for the depressed patients was 10% less at 6 months and 15% less at 1 year than that of the nondepressed patients (Figure 3).

Several researchers have investigated the effect of depression on coronary artery disease. Frasure-Smith studied depressed and nondepressed patients after myocardial infarction (MI). Compared with the nondepressed patients, the mortality rate was 10% greater for the depressed patients at 3 months and 15% greater at 6 months (Figure 4).[7] Ahern et al.,[17] Anda et al.,[18] Barefoot and Schroll,[19] and others have made similar findings (Figure 5). How does one begin to calculate the costs of these potentially underdiagnosed and nontreated depressed patients in terms of more medical treatment, greater distress and dysfunction, and earlier death?

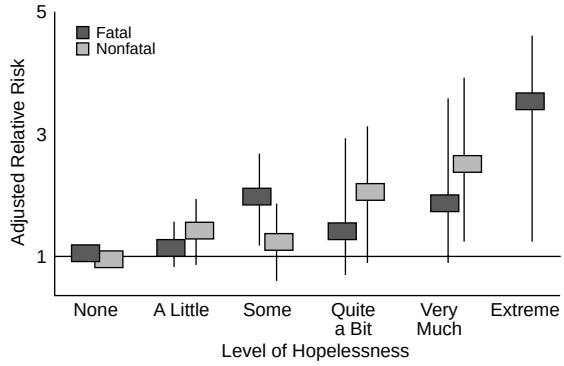
Other researchers have studied both the effect of depression on the post-MI patient and the effect of antidepressant treatment itself on cardiac disease. Some indirect effects of depression on post-MI recovery are clear. Depressed and hopeless patients are less likely to be compliant with the medication and exercise regimes. Anergia

Figure 4. Cumulative Mortality for Depressed and Nondepressed Patients Hospitalized Post-Myocardial Infarction*




*From reference 7, with permission.

Figure 5. Fatal and Nonfatal Ischemic Heart Disease in 2832 Subjects Aged 44–77 Over 12.4 Years of Follow-Up*

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may prevent participating in cardiac rehabilitation or even making doctor appointments. Still others have postulated a central autonomous effect on heart rate variability, arrhythmia, blood pressure changes, or platelet activation.[7] There is also speculation that treatment with serotonin selective reuptake inhibitors (SSRIs) may have a local as well as central effect on platelet activity.

## TREATMENT

The most comprehensive reviews of treatment for depression in a naturalistic setting are in medical outcomes studies by Wells and Sturm,[20] Rogers et al.,[21] and others.[22] While the data antedate the introduction of serotonin reuptake inhibitors (SRIs), they provide some important insights. Patients with mild-to-moderate depression were treated equally well, and less expensively, by primary care physicians and nonphysician therapists than by psychiatrists. Whether these findings represent a high proportion of spontaneous remissions in the mild-to-moderate segment, the effect of supportive listening by a physician or a therapist, or a pharmacologic effect is difficult to define. The patients with more severe symptoms were better treated by psychiatrists and were more costly because of increased drug costs and more total visits. One could say that for the sickest patients, psychiatric care, although more expensive, provided more value, but the less ill patients seemed to be equally well-treated by all groups. For adequately diagnosed major depression, the Agency for Health Care Policy and Research guidelines clearly recommend pharmacotherapy as the first-line treatment.[22] The advent of expensive but safe and powerful drugs for depression, especially the SRIs, has prompted a debate about cost/benefit, since SRI unit costs and total drug costs far exceed the costs of tricyclic antidepressant (TCA) therapy.

Simon et al.[23] and others,[8,24,25] in separate studies, pointed out that factors other than simple drug costs would virtually neutralize any cost differences between the TCAs and SSRIs. The much lower side effect profile of SRIs resulted in many fewer physician visits for titration or drug changes, thereby eliminating cost differences. Their superior side effect profile—especially overdose safety and lack of anticholinergic and cardiac side effects—makes SRIs a better value than TCAs, and the total costs are similar. Comparing the side effect profiles and other factors allows the true cost impact of the different SRIs in use today to be evaluated. Many medical groups, health maintenance organizations, and military installations have in fact conducted such studies.[26–28] Of particular value in the primary care setting are drugs for which the initial dose and therapeutic dose are virtually identical. Such drugs take the guesswork out of titration and allow for a quicker determination whether drug treatment is successful. Paroxetine and, to an extent, fluoxetine seem to fall into this category.

## SUMMARY

An analysis of the total costs of treating or not treating depression must consider many variables:

**Treatment**

- The direct unit and total cost of the medication
- The direct medical cost—psychotherapy visits, medical visits to titrate, change medications due to side effects or ineffectiveness
- The costs of medications used and discarded as ineffective
- Costs of pharmacy visits and prescriptions filled due to changes, titration

**Nontreatment**

- Increased functional disability
- Increased medical morbidity
- Increased mortality

- Increased use of inappropriate medical tests
- Increase in cardiovascular catastrophic events leading to high costs; e.g., strokes leading to rehabilitation; revascularization surgery; repeat admissions for MI, catheterization, angioplasty, etc.
- Suicide
- Suicide attempts
  (a) Increased emergency room visits
  (b) Increased cost of intensive care unit stay
  (c) Increased cost of psychiatric inpatient hospitalization

These are staggering costs in terms both of society's resources and of human suffering. And we have not yet considered the loss to those whose loved ones died by suicide. Indeed, the cost of untreated depression to society as a whole can be suggested by the mention of names such as Hemingway, Rothko, Donizetti, Poe, among countless others.

In an era when training and research are often not considered cost effective, research results suggest that training primary care physicians and medical specialists to recognize and treat depression and funding continued research that will inform future training efforts are undeniably cost effective.

The costs of comprehensive training in recognizing all psychiatric illness in the primary care setting cannot help but be returned 100-fold in direct as well as indirect savings for our society and, most of all, for our patients.

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## DISCLOSURE OF OFF-LABEL USAGE

The author of this article has determined that, to the best of his clinical estimation, no investigational or off-label information about pharmaceutical agents has been presented that is outside Food and Drug Administration–approved labeling.