Modeling the Impact of Enhanced Depression Treatment on Workplace Functioning and Costs

A Cost–Benefit Approach

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Background: The impact of depression on the workplace has been widely observed in studies examining absenteeism and reduced productivity during days at work. However, there is little scientific evidence about whether depression interventions are cost-beneficial to employers.

Objective: We construct a cost–benefit analysis of depression treatment under different workplace assumptions better reflecting the nature of employment.

Research Design: Data from a randomized controlled trial in which employed primary care patients with depression were treated in practices randomly assigned to an enhanced treatment intervention or usual care were used to construct a cost–benefit model from an employer perspective under different assumptions regarding employment.

Subjects: A national sample of 198 workers employed in a range of positions by companies was studied.

Measures: Benefits included self-reported productivity and absenteeism; costs included intervention and treatment costs. Net benefit was calculated under different scenarios and return on investment (ROI) is derived.

Results: Enhanced depression treatment resulted in an average net benefit to the employer of $30 per participating worker in Year 1 of the intervention and $257 per participating worker in Year 2, for an estimated ROI during the 2-year period of 302%. ROI increased in firms that rely on team production, hire more costly substitute labor, or realize penalties for output shortfalls. ROI decreased in firms that have a large fraction of employees with dependent coverage and experience high turnover rates. Results also are sensitive to how subjectively reported productivity is valued.

Conclusion: Many employers will receive a potentially significant ROI from depression treatment models that improve absenteeism and productivity at work.

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Supported by the Robert Wood Johnson Foundation, grant #048119.

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ISSN: 0025-7079/06/4404-0352

Key Words: return on investment, economic analysis, employer-sponsored health insurance

(*Med Care* 2006;44: 352–358)

The ability of depression to affect the workplace has been widely observed in studies examining absenteeism,[1–6] and reduced productivity during days at work.[7–10] Despite this evidence, comparatively little research has examined whether depression interventions that enhance general functioning[11–14] also improve productivity and absenteeism. Consequently, there is little scientific evidence about whether depression interventions are cost-beneficial to employers. We used results from a randomized controlled trial in which employed primary care patients with depression were treated in practices randomly assigned to an enhanced treatment intervention or usual care to construct a cost–benefit analysis of depression treatment under different workplace assumptions better reflecting the nature of employment in the 21st century.

Cost–benefit analysis allows for the comparison of dollar valued economic benefits of an intervention to the dollar-valued economic costs associated with the intervention.[15] Although the societal perspective generally is recommended in the evaluation of medical interventions,[16] our research takes the employer perspective because our desire is to examine whether there is a financial incentive for employers to implement enhanced depression treatment programs for their workers.

METHODS

Conceptual Framework

Our study draws upon the theoretical model of work loss developed by Pauly et al.[17] Applying theory about simple competitive labor markets, Pauly et al[17] showed that the value to the firm of a lost day of work is equal to the full wage (cash wage plus the value of fringe benefits) per day worked; however, they posit there are 3 conditions in which using full wage as a means of quantifying the cost of lost time on the job potentially underestimates the cost of work loss to the firm. The first condition is when the absence of 1 employee reduces the marginal product of other employees in team

production. For example, a surgeon's absence prevents the entire operating team from proceeding with their work. In this case, the value of the lost output corresponds to the combined wages of the surgeon and the operating team. The second condition is when the firm hires substitute labor at a more expensive wage when an employee is absent. For example, a construction company may hire a temporary carpenter at a higher wage if their regular carpenter is absent. In this case, the value of the lost output corresponds to the higher wage of the temporary carpenter. The third condition is when there are penalties for output shortfalls. For example, a customer service employee who misses work potentially increases the number of customers who become disaffected because they cannot get their concerns resolved. In this case, the value of the lost output is equal to the value of the business disaffected customers no longer bring to the company.

The model developed in Pauly et al[17] does not specifically address the role of impaired on-the-job productivity, but the model is general enough to accommodate the effect of presenteeism in a manner directly analogous to the treatment of absences. In particular, impaired on-the-job productivity can be thought of as a fractional absence. The level of output from a worker who is on the job can vary from 0 to some maximum amount based on self-reports of "usual" productivity or on reports of normative productivity for the class of other workers in the same job. Both absenteeism and presenteeism are important workplace aspects of depression, and in the analysis that follows we incorporate both. Measurement issues related to this issue are described in detail herein.

Intervention Design, Recruitment, and Data Collection

A detailed description of the study and methods is provided elsewhere.[11] Here, we summarize the key points. The research team conducted the study in 12 community primary care practices across the United States, none of which employed onsite mental health professionals to treat depression. The 12 mixed-model practices were divided into 6 blocks by depression treatment patterns; then, 1 practice from each block was assigned randomly to enhanced care. Before patient enrollment, the research team provided brief training to physicians and care managers in enhanced care practices to provide high-quality depression care to patients with current major depression during the acute and continuation phase of treatment. Training emphasized the need for physicians and care managers to encourage patients to initiate guideline-concordant pharmacotherapy or psychotherapy. Over the course of 2 years, care managers monitored treatment response in regular telephone contacts to encourage continued treatment adherence and to make treatment adjustments or recommendations for physician follow-up as needed. Physicians reviewed monthly summaries of patient symptoms and current treatment prepared by care managers. In contrast, the usual-care group received no regular care manager contacts during the initial or continuing phases of the intervention, nor were physicians systematically informed when patients screened positive for depression.

Patients presenting for routine visits at these practices between April 1996 and September 1997 were asked to complete a 2-stage screener that identified patients reporting 5 or more of the 9 Diagnostic and Statistical Manual–IIIR criteria for major depression in the past 2 weeks. Screen-positive patients meeting criteria for bereavement, mania, alcohol dependence, pregnancy/postpartum, or life-threatening physical illness were excluded from the study, as were patients who did not intend to use the clinic as their usual source of care during the year after the index visit, patients who did not have telephone access, patients who were illiterate in English, or patients who were cognitively impaired. Data were collected by telephone using structured instruments. The research team conducted 6-, 12-, 18- and 24-month follow-up interviews between October 1996 and September 1999, achieving response rates of 92.3%, 86.2%, 76.7%, and 73.0%, respectively. The sample yielded 497 respondents, of whom 198 were consistently employed during the 24-month follow-up period. We based our estimates on results for the 198 consistently employed respondents. Sociodemographic characteristics of the employed and unemployed respondents as well as consistently and inconsistently employed respondents were not statistically different. In addition, sample attrition rates were not statistically different between subgroups.[11]

Key Measures

Because the study was conducted on workers used across the occupational spectrum by companies across the country, self-reported items with demonstrated relationships to objective measures were relied upon to measure absenteeism and productivity.

Productivity

We defined productivity as effectiveness at work during the previous 2 weeks before follow-up. Reflecting that subject ratings of work productivity are not biased by depression severity,[18] we measured the construct by subject rating of their productivity at work during the previous 2 weeks on a 0 (nothing at all accomplished) to 10 (best possible work performance) scale at 6, 12, 18, and 24 months using an item that correlates high with a self-report scale shown to predict objectively measured productivity.[19] Because this item was not available from the baseline interview, we used regression-based statistical forecasting methods to estimate its baseline value.[20–22] In brief, regression models were used to characterize the relationship between sociodemographic variables, intervention group, and clinical variables at the 6-month interview. Coefficients from these models were used with baseline data to obtain estimates of baseline productivity. The 6-month models predicted 55% of the variance in productivity. To quantify the intervention's impact on productivity, we calculated the proportion gain in 24-month productivity attributable to the intervention by year over the course of 2 years.

Absenteeism

We defined absenteeism as the total number of work hours lost due to illness or doctor visits over the past 4 weeks. We measured absenteeism at baseline, 6, 12, 18, and 24 months by calculating lost work hours from employee reports of how many full workdays and part workdays they missed due to illness or doctor visits, reflecting that employee reports

demonstrate high agreement with employer records of absenteeism. Methods parallel to the methods used for productivity were employed to quantify the intervention's impact on absenteeism by year over the course of 2 years.

Annual Earnings

Annual earnings were estimated by employee estimates of the income they received the previous calendar year at baseline, 12, and 24 months from wages (including bonuses, overtime, tips, and commission); self-employment; and transfer payments (unemployment, worker's compensation, disability, retirement, annuities or social security). Parallel questions were asked to estimate spouse income. Single imputation was used to impute annual earnings from sociodemographic variables for fewer than 20% of nonwave-missing subjects who refused to report earnings data. All earnings data were inflated to Year 2000 dollars using the Consumer Price Index.

Cost–Benefit Estimation

Table 1 displays the costs of enhanced depression treatment which include costs for health provider training, the program itself, and outpatient costs attributable to the program (eg, care manager services).[23] Table 1 displays these incremental costs per participating employee and costs for a hypothetical employer with 1000 employees, 5% of whom are assumed to have sought primary care during a depression episode. Incremental costs refer to the cost of the intensive treatment minus the cost of the control treatment. Using the estimated cost of training physician practice setting ($4660 per practice[23]), we assume that our hypothetical employer contracts with 10 practice sites, yielding a "fixed cost" of implementing the program of $46,600.

Table 2 displays the incremental benefits from improved absenteeism and productivity,[24] valued in terms of the average full wage ($24,174 plus 0.5 fringe benefits). Table 2 displays the average benefit per participating employee who visits primary care during a depression episode. Table 2 also displays benefits for a hypothetical employer with 1000 employees, 5% of whom are assumed to have sought primary care during a depression episode.

As described previously, the theoretical model developed by Pauly et al[17] posits 3 dimensions along which a worker's absence (or reduced on-the-job productivity) can result in costs to the firm greater than the worker's full wage: (1) the degree of team production, (2) the expense of obtaining substitute labor, and (3) the extent of any penalties for output shortfalls that can result from absences/impaired productivity. Because in practice a particular job will embody some combination of all 3 attributes, we propose to examine a baseline scenario in which there are no additional costs beyond the worker's full wage and 3 alternative scenarios for which there are costs beyond the worker's full wage based on a survey of 800 managers conducted by Nicholson et al.[25] Our selection of the 3 specific worker types is intended to convey the range of cost–benefit consequences that employers with varying workforces can realize. We choose these particular worker types because, although in each case all 3 dimensions contribute to the overall wage multiplier, a single dimension is generally dominant for each case.

TABLE 1. Incremental Enhanced Depression Treatment Cost Assumptions, Treated Worker, and Hypothetical Company Aggregate

	Treated Worker		Company Aggregate	
	Year 1	Year 2	Year 1	Year 2
Training	*	$0	$46,600	$0
Enhanced treatment	$158	$130	$7900	$6500
Treatment	$457	$223	$22,832	$11,175
Sum	$735	$353	$77,332	$17,675

Company-level figures reflect assumption that firm employs 1000 workers, 5% of whom seek primary care during a depression episode.

*Physician practice training represents a fixed cost of implementing enhanced depression treatment. We assume there are 10 physician practice sites that must be trained at a one-time cost of $4660 per site.

TABLE 2. Incremental Enhanced Depression Treatment Benefit Assumptions, Treated Worker and Company Aggregate

	Treated Worker		Company Aggregate	
	Year 1	Year 2	Year 1	Year 2
Absenteeism	$351	$1299	$17,550	$64,950
Productivity	$1793	$4190	$89,625	$209,475
Sum	$2144	$5489	$107,175	$274,425

Company-level figures reflect assumption that firm employs 1000 workers, 5% of whom seek primary care during a depression episode. Average worker salary from the sample is $24,174. Fringe benefits are assumed to cost 50% of average salary.

Worker Type 1: Team Automobile Assembler

On the basis of survey data in Nicholson et al,[25] a team automobile assembly worker has a wage multiplier of 1.26. This work by its nature is characterized by team production, although replacements may not be difficult to find. Output penalties are typically not severe.

Worker Type 2: Registered Nurse

Survey data reveal that hospital-based RNs have a wage multiplier of 1.41. Nurses typically are important members of a team production process within the hospital environment. Replacing absent nurses with temporary employees generally costs the hospital considerably more than the absent nurse's salary. Immediate output shortfall penalties may or may not be severe in a hospital environment.

Worker Type 3: Paralegal

According to the survey data, paralegals have a wage multiplier of 1.93. Paralegals work closely with high-paid professionals and affect their productivity. Their absence can limit the productivity of the legal team, they may not be easily replaced because of the tight deadlines often faced, and large penalties for the firm can result if billings cannot be made. Clearly, in the case of the paralegals, the support role to highly paid professionals who deal with multimillion dollar cases is critical.

Sensitivity Analyses

Although enhanced depression treatment may be cost-beneficial to employers in an idealized world, several factors exist that could blunt the impact of an enhanced depression treatment program in actuality. First, many employees typically carry other family members on their employer-sponsored health insurance policies. It may be difficult for employers to selectively offer the enhanced depression treatment only to employees but not their spouses. In the first sensitivity analysis, we will allow for each treated employee to have a spouse that receives enhanced depression care under the employee's insurance, incurring the same treatment costs as intervention employees did, but returning no observable benefits to the employer. It should be noted that it is possible that workers whose depressed spouses receive enhanced depression treatment may experience improved absenteeism and productivity,[26] but such gains cannot be meaningfully estimated in this database. Conversely, it is also possible that employers could limit the intervention to employees identified at the worksite, which could make it far more likely that only employees (and not their spouses) receive enhanced depression treatment.

Second, employee turnover limits the period during which benefits (and costs) from enhanced depression treatment are realized by employers. Although we conducted our primary analyses on consistently employed patients to estimate an upper bound of enhanced depression treatment impact, we estimate benefits more conservatively by assuming that some fraction of workers does not realize Year 2 costs or benefits. We use the Bureau of Labor Statistics estimate of turnover in the private sector for the 12-month period ending August 2004 of 25.1%.[27] Because it is possible (but not known) whether depressed employees have a higher turnover rate, we re-estimate our model using a 50% Year 1 turnover estimate.

Third, we test the sensitivity of our estimates to potential measurement error in relying on employees' subjective rating of their productivity. Although subjective ratings have been shown not to be biased by depression severity,[18] we heretofore assumed that these subjective assessments translated on a one-to-one basis into objective productivity in keeping with much of the prior literature.[28] However, recent evidence suggests that subjectively measured productivity may have a smaller (but statistically significant) relationship with objectively measured productivity, particularly in jobs where productivity variation has been "engineered" out of the position.[18] Because it seems plausible to assume that subjective improvements in productivity may not translate on a one-to-one basis to objective improvement, to avoid the potential for an upward bias in our valuation of productivity benefits we reduce observed changes in subjective productivity by 50% to determine the sensitivity of our estimates to this assumption.

RESULTS

Table 3 describes that the sociodemographic and clinical characteristics of both groups are comparable except for physical comorbidity, which we control for (along with other covariates) in our models. Table 4 presents the cost benefit estimates for the baseline scenario using assumptions outlined previously. Enhanced depression treatment results in an average net benefit to the employer of $30 per worker in Year 1 of the intervention and $257 per worker in Year 2, or an estimated return on investment (ROI) over the 2-year period of 302%. ROI provides an easy "shorthand" way of comparing different investment opportunities available to firms relative to the cost of acquiring capital for investment purpose, which is generally higher than typical societal discount rates. Table 4 also displays the estimated ROI for 3 professions where the economic value of employer benefits may be greater than the absent employee's full wage. In these scenarios, intervention costs remain the same, whereas benefits increase by the multiplier associated with the profession. With a 1.26 multiplier (automobile assembler), the overall per-worker net benefit of the intervention is $56 in Year 1 and $328 in Year 2, or an estimated ROI during the 2-year period of 406%. With a 1.41 multiplier (nurse), the overall per-worker net benefit of the intervention is $74 in Year 1 and $369 in Year 2, or an estimated ROI during the 2-year period of 466%. With a 1.93 multiplier (paralegal), the overall per-worker net benefit of the intervention is $130 in Year 1 and $512 in Year 2, or an estimated ROI during the 2-year period of 675%.

TABLE 3. Baseline Sociodemographic and Clinical Characteristics of Patients Randomized to Enhanced and Usual Care

	Enhanced Care, n = 96	Usual Care, n = 102
Mean age (SD)	37.6 (9.5)	40.1 (10.3)
% Female	84.4	82.4
% Minority	14.6	11.8
% Currently married	39.6	52.0
% High school educated	88.5	93.1
% Health insured	86.5	85.3
% Professional/administrators	19.8	29.4
% Managers/salespeople	35.4	37.3
% Clerical/services	44.8	33.3
% Employed full time	85.4	74.5
% Paid sick leave benefits	53.1	51.0
Mean baseline salary (SD)	19,571 (11,933)	18,888 (13,690)
Mean depression symptoms (SD)	6.7 (1.4)	6.6 (1.4)
% Comorbid dysthymia	13.5%	16.7%
Mean physical comorbidities (SD)	1.1 (1.2)*	1.5 (1.4)

*$P < 0.05$.

Table 5 displays the results of the sensitivity analyses we conducted. In the first sensitivity analysis, we assume that each treated worker has a spouse not employed with the company who receives enhanced depression care under the company's health plan. Thus, the company incurs costs for twice as many enrollees, but realizes benefits for only half of program participants. ROI estimates range from 129% to 342%. In the second sensitivity analyses, we investigate the impact of 25% and 50% turnover rates. Although Year 1 values remain constant, Year 2 net benefit values fall because

TABLE 4. Baseline Company-Wide Cost-Benefit Estimates from Enhanced Depression Treatment Under Different Multiplier Assumptions

Scenario	Year 1	Year 2	Total
Multiplier = 1			
Benefits	$107,175	$274,425	$381,600
Costs	77,332	17,675	95,007
Net benefit	29,843	256,751	286,594
Net benefit (per worker)	30	257	—
ROI			302%
Multiplier = 1.26 (automobile assembler)			
Benefits	135,041	345,776	480,816
Costs	77,332	17,675	95,007
Net benefit	57,709	328,101	385,810
Net benefit (per worker)	56	328	
ROI			406%
Multiplier = 1.41 (registered nurse)			
Benefits	151,117	386,939	538,056
Costs	77,332	17,675	95,007
Net benefit	73,785	369,264	443,050
Net benefit (per worker)	74	369	
ROI			466%
Multiplier = 1.93 (paralegal)			
Benefits	206,848	529,640	736,488
Costs	77,332	17,675	95,007
Net benefit	129,516	511,966	641,482
Net benefit (per worker)	130	512	
ROI			675%

Company-level figures reflect assumption that firm employs 1000 workers, 5% of whom seek primary care during a depression episode.

TABLE 5. Net Benefit Estimates and ROI for Sensitivity Analyses of Enhanced Depression Treatment Cost–Benefit Model

Scenario	Year 1	Year 2	ROI
Each treated worker has treated spouse			
Multiplier = 1	−$24	$239	129%
Multiplier = 1.26	4	310	188
Multiplier = 1.41	20	352	223
Multiplier = 1.93	75	494	342
Annual turnover is 25.1%			
Multiplier = 1	30	192	245
Multiplier = 1.26	58	246	335
Multiplier = 1.41	74	277	387
Multiplier = 1.93	130	383	566
Annual turnover is 50%			
Multiplier = 1	30	128	184
Multiplier = 1.26	58	164	257
Multiplier = 1.41	74	185	300
Multiplier = 1.93	130	256	447
Reduced value of subjectively reported productivity 50%			
Multiplier = 1	−15	152	144
Multiplier = 1.26	1	196	208
Multiplier = 1.41	11	222	244
Multiplier = 1.93	43	310	371
Each treated worker has 1 treated spouse, annual turnover 25.1%, and reduced value of subjectively reported productivity 50%			
Multiplier = 1	−69	101	20
Multiplier = 1.26	−53	134	51
Multiplier = 1.41	−43	153	69
Multiplier = 1.93	−11	219	132

Company-level figures reflect assumption that firm employs 1000 workers, 5% of whom seek primary care during a depression episode.

benefits and costs are not realized in Year 2 for one-quarter to one-half of participants. ROI estimates range from 184% to 566%. In the third sensitivity analysis, we examine the impact of reducing the value of subjective productivity estimates by half. Relative to the results observed in Table 4, Year 1 net benefit level actually becomes negative with a multiplier of 1, while Year 2 net benefit levels fall by between 20% and 40%. ROI ranges from 144% to 371%. Lastly, we evaluate our estimates of ROI by acknowledging all 3 potential sources of attenuation: each treated worker is assumed to have 1 treated spouse, annual turnover is 25%, and the value of subjective productivity improvements are reduced by half. Here we observe that all net benefit values have fallen substantially, though all remain positive, indicating that even under harsh assumptions, the benefits of enhanced depression treatment to firms are still apparent. ROI under these assumptions ranges from 20% to 132%.

DISCUSSION

This analysis demonstrates that many employers may receive a potentially meaningful return on investment from enhanced depression treatment which improves absenteeism and productivity at work, even if they pay first-dollar costs for the program. The actual return on investment will vary across employers by occupational distributions in the company, by whether covered partners are able to enroll in the program, and by turnover. Actual return on investment may also be less across all employers if subjective improvements in productivity do not translate into a similar magnitude of objective improvement. However, even when these considerations are considered jointly in a "worst case" scenario, employers still realize a return on investment of $1.20 for every $1.00 they invest.

Our estimates of ROI to employers for enhanced depression treatment add to a small but growing literature supporting the potential benefit to employers of other disease management interventions.[29–32] Some of these cost–benefit estimates are based on randomized trials,[24] but others are derived from economic simulation studies[33] or less rigorous analysis of the business case for quality mental health services.[34] The number of studies on the cost-benefit to employers of treatment of depression and other chronic conditions is still dwarfed by the volume of literature on the cost of

depression and other chronic disease on health plans, employers and society, and by the literature on cost-benefit of depression care to health plans. Moreover, not all studies of the cost-benefit of disease management programs have shown positive results.[35]

We found that under the most conservative assumptions, ROI estimates were positive, indicating that the effect of enhanced depression care on ROI is robust to a number of challenging assumptions. Moreover, the ROI for enhanced depression care accrues over a relatively short period of time compared with the ROI for high quality disease management programs for other chronic conditions.[36] These results lend support for efforts to increase marketing of enhanced depression care programs to employers and to encourage employers to compare the ROI for investing in high quality depression care to investments in disease management programs for other chronic conditions.

Our results raise several policy questions. Given the ROI associated with high quality depression care, how might it be financed? Would employers be willing to increase their contribution to employee's premiums for depression care management? Would they consider small increases in their per-member per-month costs to offer high quality depression care? Increasing costs to employees who participate in this program might be a disincentive to participation. How might this care management program be financed if it was delivered through a disease management vendor, employee assistance program, or managed behavioral health organization? What contribution to the cost of the program would delivery systems be expected to make? Although there may be a possible role for the government to create financial incentives to employers for adopting high quality depression care management, the most likely scenario is that businesses will choose to adopt the care management program based on its projected ROI. However, for businesses to make informed purchasing decisions, the ROI data on depression care must be widely available. These questions must be addressed in considering the potential for widespread diffusion of depression care management programs.

The internal validity of our return on investment estimates is strengthened by their derivation from state-of-the-art analysis of high-quality randomized trial data. We attempted to err on the side of being overly conservative in our assumptions by, for example, defining absenteeism to include the time the employee missed work to seek health care; thus, employers do not have to subtract the time employees spend in the program from the projected absenteeism benefits they stand to realize. Similarly, we avoided overestimating the benefits employers realize from improved productivity by ensuring that our measurement strategy would not be biased by improvements in depression severity[18]; thus, employers do not have to subtract a portion of the projected productivity benefits they stand to realize fearing that less depressed employees become more optimistic about their productivity, rather than more productive. We challenged our productivity measurement strategy further by testing the assumption that all employees overestimate their objective contributions at work, showing that substantial benefits still remain. The study was not designed to identify which components of the intervention were the most cost-beneficial, although the increasing benefit in the second year suggests that ongoing care management is a vital component of enhanced treatment of a chronic disease like depression.

The external generalizability of our findings is strengthened because we tested a practical intervention implemented by primary care professionals under naturalistic practice conditions in a diverse group of workers employed in a variety of occupations by multiple companies across the country. Baseline productivity rates in this sample appear to be comparable to estimates derived from nationally representative depressed employee samples[10] whereas baseline absenteeism rates are slightly higher than community-sampled workers with major depression.[2] We extended the external generalizability of our results by demonstrating that ROI increases in occupational groups characterized by team production, expensive substitute labor, and/or output shortfall penalties; and low turnover rates. We also extend the external generalizability of our results by demonstrating the employers who offer this benefit to employees and their covered partners also stand to realize a return on investment, suggesting that this benefit can be incorporated into standing health plan policies rather than be delivered as an employee-only benefit through a workplace program. One issue with the analysis is that the cost and benefit parameters are derived from a relatively small sample of workers raising concern about the the precision with which they are estimated. True returns from enhanced depression treatment will depend on numerous factors, some of which have been described and modeled here. Other factors will include the consistency and efforts of the depression care managers and the degree of clinical follow-up that occurs in practice.

Our work raises critical questions that warrant additional research. First, more research is needed to guide the development of interventions designed to increase employer demand for high quality depression care. This entails a more thorough understanding of how employers make decisions on benefit purchasing, and how ROI estimates for benefits is (or is not) incorporated into these decisions. Second, interventions aimed at increasing employer demand must include education about the need for improved depression treatment. Third, research is needed to understand how information on ROI can be packaged and presented most effectively to employers, including tailoring of ROI data to individual employers. Finally, more research is needed to compare the ROI associated with this intervention to ROI associated with high quality treatment of other mental and physical disorders.

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