An Exercise in Cost-Effectiveness Analysis: Treating Emotional Distress in Melanoma Patients

Cristina B. Bares,[1] Peter C. Trask,[1,2] and Steve M. Schwartz[1]

This study presents a retrospective assessment of a psychological intervention examined for its potential cost-effectiveness if implemented into standard care. It discusses (1) the cost of instituting a psychological intervention for distressed melanoma patients, (2) the effectiveness of that intervention for reducing distress when compared with a standard care group, and (3) the costs of providing the treatment as compared to costs of physician time to answer distress-driven questions as part of standard care. Although the per-minute cost of providing the psychological intervention was marginally greater than standard care, providing the intervention was significantly cheaper in terms of distress reduction. Inclusion of 60% payer reimbursement rates for the intervention further suggested that incorporating a psychological intervention into standard medical care for melanoma patients would potentially generate revenue.

KEY WORDS: cost-effectiveness analysis; behavioral medicine intervention; medical service utilization; emotional distress.

INTRODUCTION

Because of the increasing cost of health care and the intensifying concern of managed care organizations on controlling costs, many medical treatments and procedures have been evaluated for the monetary costs and benefits of providing health care (e.g., Meltzer, 2001; Yates, 1994). Mental health interventions have also been scrutinized with a focus on reimbursing manualized interventions with proven therapeutic efficacy (Chambless & Hollon, 1998; Chiles, Lambert, & Hatch, 1999). Although significant attention has been devoted to assessing the emotional and behavioral outcomes of psychotherapeutic interventions, considerably less effort has been dedicated to measuring the costs incurred by these interventions or the potential cost-offset that may result. Although studies that examine costs have a long history (e.g. Cummings & Follette, 1968), only recently have cost evaluation techniques been utilized with any regularity to provide an evaluative framework for assessing whether behavioral interventions produce a favorable cost-benefit. Even more recent is the examination of the potential benefits that may occur when behavioral interventions are applied to medically-ill populations. The current paper provides a retrospective cost-effectiveness assessment of a behavioral intervention that was included as part of a research study, and further examines the potential cost-effectiveness if the intervention was implemented into standard care. Essential to the understanding and appreciation for the need for behavioral interventions with medically-ill populations and the assessment of cost-benefit analyses is a brief review of distress-driven treatment-seeking behavior and cost-effectiveness analyses.

Distress-Driven Treatment-Seeking Behavior

It has been noted that psychological distress prompts inappropriate treatment-seeking behavior. In fact, recent reports suggest that 50–80% of all

[1] Behavioral Medicine Program, University of Michigan, Ann Arbor, Michigan.
[2] Correspondence should be addressed to Peter C. Trask, PhD, Research Investigator, Behavioral Medicine Program, 475 Market Place, Suite L – West, Box 7, Ann Arbor, Michigan 48108-0757; e-mail: pctrask@umich.edu.

medical visits are made by patients not suffering from a physical illness, but from psychological distress (Chiles et al., 1999; Heywood, Blackie, Cameron, & Dowell, 1998). This treatment-seeking behavior may be in the form of increased phone calls to physicians and/or nursing staff, hospital visits, or unnecessary medical procedures. Often the result of such behavior is underdiagnosis and undertreatment of the psychological distress, but overtreatment of the physical complaint by members of the medical community (Cummings, 1991). This type of inappropriate treatment-seeking and mistreatment of the underlying causes of such behavior, can needlessly inflate utilization costs by consuming time from expensive and busy practitioners who are not trained to treat such distress and whose skills are better utilized elsewhere in the health care system.

Although distress-driven treatment-seeking behavior is an issue for those with no identifiable physical disease, it is additionally problematic for those who have real physical illnesses. These individuals, referred to as the "worried unwell" (Russo & Howard, 1999), have distress that is often a result of either their illness, treatments for the illness, or fear that their illness may recur or lead to other problems (Cummings, 1991). This distress leads to increase medical utilization and treatment-seeking behavior.

One way to decrease inappropriate, distress-driven, treatment-seeking is through implementation of behavioral interventions that specifically address the psychological distress and inappropriate illness–behavior that results. In fact, the current literature supports using psychological interventions as a cost-effective way of decreasing medical utilization (VandenBos & DeLeon, 1988). For example, a study of Kaiser Permanente patients found that after emotionally distressed, high utilizing patients received a psychotherapeutic intervention, utilization of services decreased significantly (Cummings, 1991). In addition, Caudill, Schnable, Zuttermeister, Benson, and Friedman (1991) found that the number of visits made by patients suffering from chronic pain decreased by 38% within 1 year of a behavioral medicine intervention (i.e., relaxation training and cognitive therapy skills). Finally, Jacobs (1988) reported that biofeedback training before surgery reduced postoperative outpatient visits by 63% and inpatient hospital days by 72%. All of these findings are consistent with a recent meta-analysis that concluded that 90% of the studies reviewed reported a decrease in medical utilization following a psychotherapeutic intervention (Chiles et al., 1999). Given these findings, one can question why behavioral interventions are not part of standard medical care. One potential reason may be because they are viewed as not being economically effective.

Cost-Effectiveness Analyses

Various analytical approaches have been used to evaluate the economic outcomes of behavioral/psychological interventions (Freedberg, Geller, Miller, Lew, & Koh, 1999; Goldie, Weinstein, Kuntz, & Freedberg, 1999; Kennedy, Gray, Denman, & Phillips, 1999), including cost-minimization analysis, cost-utility analysis, cost-benefit analysis, and cost-effectiveness analysis (Evans, 2000). These techniques differ somewhat in their conceptual and methodological framework. For example, cost-minimization analyses differentiate between options based on the monetary resources used to provide treatment, and thus evaluate only the cost of each treatment. This is problematic because it equates any treatment to a "more services/more costs" framework that does not reflect the complex ways in which psychological and/or behavioral risk factors impact health and health service utilization including any cost-offset that may occur. Given the decision by insurance companies to have a mental health carve-out, a cost-minimization analysis would suggest that provision of psychological/behavioral interventions would not be cost-effective because the provision of those additional services would cost more money. Alternatively, cost-utility analyses combine mortality and morbidity data into a single measure of treatment outcome (Drummond & Maynard, 1993; Evans, 2000). Using this approach, many behavioral medicine interventions would be beneficial and cost-effective only if they reduced medical morbidity or mortality. In the case of distress-driven treatment-seeking, this type of analysis becomes problematic because mortality or morbidity is by definition not the target problem or outcome. Thus, for the purposes of evaluating the cost-effectiveness of a psychological or behavioral intervention, neither approach is sufficient.

The two techniques that are more appropriate for focusing on the costs and outcomes of psychological/behavioral interventions are cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA; Yates, 1998). As the name suggests, CBA compares the costs of a treatment to the benefits of that treatment. Usually, the cost and benefit units in a CBA are monetary, although other cost and benefit measures may be used as long as they are measured in the same units.

An alternative approach, CEA is considered superior to CBA because CEA allows for a comparison among treatment options even when costs and outcomes are measured in different units. In addition, CEA does not require placing a dollar value on a given clinical outcome. Recently CEAs have also focused on measuring health as a possible outcome (Brouwer & Koopmanschap, 2000).

Cancer

A patient population for which psychological issues, emotional distress, and increased treatment-seeking related to distress may be an issue is in the cancer population. Currently, it is widely acknowledged that a significant proportion of individuals with cancer (approximately 30%) report levels of distress, depression, and anxiety as a result of their illness that is severe enough to benefit from a psychological intervention (Derogatis et al., 1983; Stefanek, Derogatis, & Shaw, 1987; Trask et al., 2001). The presence of such distress and the negative impact that it could have on cancer patients has recently prompted the National Comprehensive Cancer Network to develop guidelines for diagnosing and treating distress (Holland, 1997). Despite the known presence of distress, consistent psychological and behavioral interventions are often not an integral part of comprehensive cancer programs. As such, it is likely that individuals with high levels of distress may seek to reduce this distress by increasing their contact with medical personnel (e.g., oncologists and nurses) either through unscheduled hospital visits or more likely through e-mail or phone contact. Given that psychological interventions in other illness areas have demonstrated cost-benefit by reducing the number of contacts patients have with the medical system, it would be interesting to determine whether similar benefit could be obtained in a cancer population.

At present, there is a dearth of studies examining the cost-effectiveness of psychological and behavioral outcomes in medical populations, especially cancer. As such, in order to provide some preliminary findings on the use of cost-effectiveness analyses for psychological and behavioral interventions and outcome, we conducted a retrospective examination of the cost-effectiveness that would result from the administration of a structured cognitive–behavioral intervention to highly distressed melanoma patients. We compared the intervention to standard care alone and utilized several working hypotheses presented later in the paper. We also examined the cost-offset of such an intervention if the intervention was able to result in the elimination of one problematic illness behavior (namely distress-driven phone calls to physicians and nurses).

METHOD

Melanoma Research Study

Medical care for melanoma patients at the Multidisciplinary Melanoma Clinic (MMC) at the University of Michigan Comprehensive Cancer Center includes an initial appointment with the oncologist, surgery, and a follow-up appointment to determine if additional therapy for the melanoma is needed (e.g., chemotherapy, radiation). Mental health services are available to melanoma patients on an as needed basis. As part of an internally-funded, longitudinal, ongoing research project to examine distress, patients were recruited at their initial contact with the MMC. Participating patients were assessed for levels of distress, coping styles, anxiety levels, and health functioning on four different occasions (i.e., before initial appointment, 2-, 5-, and 9-months after initial appointment). The Global Severity Index (GSI) of the Brief Symptom Inventory (BSI; Derogatis, 1992) was utilized as the overall measure of patient distress. Those with moderate to high levels of distress (GSI Area T scores ≥ 60) at the 2-month assessment were randomized either to standard care plus cognitive–behavioral intervention or standard care alone. Manualized individual cognitive–behavioral therapy (CBT) consisted of a diagnostic intake session followed by three structured sessions intended to provide instruction in skills acquisition. Treatment was augmented with a workbook containing sections on relaxation training, challenging of negative thoughts, and problem-solving. Each section of the workbook corresponded to the material covered in one of the therapy sessions, with an extra section of the workbook on maintaining progress.

Cost-Effectiveness Analysis

In the CEA analysis we evaluated two treatment conditions: Condition 1, standard care and Condition 2, standard care plus CBT. We evaluated both in terms of their impact on emotional distress

(i.e., GSI scores), the costs for Condition 1 versus Condition 2, and the cost-offset that might be considered if the CBT intervention eliminated a specific illness behavior (i.e., distress-driven phone calls). We further operated on several working hypotheses in order to conduct our analyses. First, we hypothesized that emotionally-distressed patients would benefit from CBT relative to standard care in terms of decreased levels of distress. Second, the direct costs of CBT would be greater than providing standard care alone. Third, when the costs are compared correcting for the potential revenue generation of the intervention, the cost of CBT would be greatly reduced or overcome. Finally, for the sake of simplicity, we made the assumption that the psychological intervention would completely reduce the occurrence of the illness behavior. Although we realize that such an assumption would be unlikely, we also note that the intervention would likely have effects on other behaviors not addressed in the study.

Costs

The overhead costs of providing standard care that are the same for both conditions (i.e., a constant) are specified in Table I and reflects the obvious direct costs. Labor costs are calculated based on the median salaries for a research assistant ($10.09/hr/24K per year) and postdoctoral fellow ($10.56/hr/27.5K per year), respectively, and reflect the per minute cost of engaging in each task associated with enrolling patients in the study (i.e., phone calls and data entry).

Condition 1: Standard Care

The staffing cost of not providing the intervention to highly distressed melanoma patients was calculated based on anecdotal reports by treating physicians and nurses that highly distressed patients were seeking reassurance via distress driven phone calls beyond what would usually be required for dealing with their physical illness. In order to quantify the amount of time physicians and nurses were spending discussing distress-related issues with patients, we obtained diary estimates of phone contact from those individuals over a 1-week period. Nurses' estimates revealed that they spent an additional 3.75 hr/week and physicians an additional 1.63 hr/week talking with distressed patients. We then calculated the per-minute staffing cost, based on salary information provided by the department's financial analyst as indicated

Table I. Costs for Condition 1 (Standard Care)

	Cost ($)
Administrative costs	
Mailing costs per patient	
Baseline cost	
Envelopes (2)	0.32
Questionnaires	0.91
Stamps	2.57
Follow-up cost	
Envelopes (2)	0.32
Questionnaries	0.80
Stamps	1.73
Phone call cost per patient	
Average time to recruit $(2 \times 0.168)^a$	0.34
Average time to follow-up $(0.3 \times 0.168)^a$	0.05
Data entry costs per patient	
Average time to score $(14.18 \times 0.176)^a$	2.50
Average time to enter $(4.64 \times 0.176)^a$	0.82
Total administrative costs	10.36
Staffing costs	
MD's time/distressed patient $(3.25 \times 28.85)^b$	93.75
RN's time/distressed patient $(11.25 \times 21.63)^b$	243.39
Total staffing costs	347.75
Total costs	358.11
Outcome	0.89^c
Cost/outcome ratio	402.37

Note. Salary used for phone call costs was based on a research assistant's salary of $21,000, 40 hr/week, and 52 weeks/year, data entry costs were based on a clinical psychology postdoctoral fellow's salary of $27,560, 50 hr/week, and 52 weeks/year. MD's salary was provided as $60,000. RN's salary was provided as $45,000. Per minute calculations: Total cost = $358.11; Minutes spent = 870.00; Per minute cost = $0.41.
[a]Time (min) × $ rate/min.
[b]Hours spent × $ rate/hr.
[c]Change in distress level.

in Table I (MD's salary 60K per year; RN's salary 45K per year).

Condition 2: Cognitive–Behavioral Therapy

Beyond the cost of Condition 1, the costs involved in providing the psychological intervention (Condition 2) to melanoma patients were obtained by identifying and calculating staffing costs as indicated in Table II. These additional costs included the material costs of a patient workbook, scheduling patients for treatment and providing four sessions of individual therapy to highly distressed melanoma patients by a staff-level licensed clinical psychologist. Labor costs for providing the therapy are based on the median salary of a licensed clinical psychologist ($20.60/hr/53.5K per year).

Table II. Costs for Condition 2 (Standard Care Plus Cognitive–Behavioral Intervention)

	Cost ($)
Administrative costs (Same as those for patients receiving standard care; see Table I)	
Total administrative costs	10.36
Staffing costs	
Scheduling cost per patient	
Average time to schedule $(2.3 \times 0.176)^a$	0.40
Creation of workbook (time and supplies)	5.00
Session cost per patient (four sessions administered)	82.40
Total staffing costs	87.80
Total costs	98.16
Outcome	12.82^b
Cost/outcome ratio	7.66

Note. Additional staffing costs for scheduling and creation of workbook were based on a clinical psychology postdoctoral fellow's salary of $27,560, 50 hr/week, and 52 weeks/year. Session cost per patient is based on the per hour rate of a licensed clinical psychologist working 50 hr/week, 52 weeks/year at a salary of $53,560. Per minute calculations: Total cost = $98.16; Number of sessions = 4; Minutes per session = 50; Per minute cost = $0.49.
^{a}Time (min) × $ rate/min.
^{b}Represents change in distress level.

RESULTS

Level of Distress

Nineteen melanoma clinic patients were randomized to standard care and 19 patients were randomized to CBT. Of those randomized to CBT, 8 declined to engage in treatment. Subsequent analyses comparing Conditions 1 and 2 are based on an active treatment approach. The mean level of distress at the 2-month assessment was 65.16 (Condition 1) and 64.73 (Condition 2). Distress levels in both groups were clinically elevated, but not statistically different, $t(28) = 0.212$, $p = .833$, *ns*. Mean distress levels for individuals receiving standard care assessed at 5-months posttreatment ($\chi = 64.27$) had not changed significantly when compared with the 2-month assessment (i.e. point of randomization), $t(14) = 0.966$, $p = .350$, *ns*. In contrast, patients receiving CBT reported an average distress level within the normal range of 51.91 at 5-months posttreatment. This change is both clinically and statistically significant, $t(10) = 3.619$, $p < .005$, supporting our first hypothesis. Table III presents the distress levels for both groups before and after the intervention in addition to the difference between the two occasions.

Table III. Distress Levels for Participants in Each Condition

	Condition 1 (standard care)	Condition 2 (standard care plus cognitive–behavioral intervention)
Distress before intervention (GSI area *T* score)	65.16	64.73
Distress after intervention (GSI area *T* score)	64.27	51.91
Difference in distress	0.89	12.82**

$^{**}p < .01.$

Cost-Effectiveness Ratio

The clinic physicians and nurses, using daily diaries, indicated that a total of 14.5 hr (2 @ 1.63 and 3 @ 3.75, respectively), or 870 min was spent on the phone talking with highly distressed melanoma patients per week. As such, the cost of standard care for addressing emotional distress was $0.41 per min ($358.11/870 min). In contrast, CBT consisted of four 50-min sessions for a total of 200 min spent with each patient (four sessions × 50 min) to produce a cost of $0.49 per min ($98.16/200 min) supporting our second hypothesis, albeit marginally.

Because standard care and CBT had differential impact on the outcome of emotional distress, we further analyzed the effects of intervention as suggested by Fishman (1975). In particular, the results were further analyzed to achieve a more meaningful interpretation of the effects of the psychological intervention. To aid in the calculations required for a CEA, we calculated the difference between distress levels at randomization and distress levels after the intervention by condition. The standard care group had a 0.89 GSI point difference in distress level. The difference in distress level for the CBT intervention group was 12.82 points. The cost-effectiveness ratio was calculated by taking the total costs for each Condition and dividing it by the change in distress level (0.89 for standard care and 12.82 for CBT). The cost-effectiveness (CE) ratios are presented in Tables I and II for standard care and CBT respectively, and reflect the dollar cost to decrease GSI score by one point. In standard care the cost to change distress as measured by GSI was in excess of $402 for a one-point change. In contrast, the cost to change distress for CBT was $7.66 per GSI point.

Table IV. Profit Calculations If Cognitive–Behavioral Intervention Was Reimbursed

Intervention cost per minute	$0.49
Intervention charge (based on 60% reimbursement rate)	
Evaluation charge	$114.00
Session charge(×3)	$216.00
Total	$330.00
Charge reimbursed per minute	$1.65
Profit (charge reimbursed − cost)	$1.16

Reimbursement for Services

The final analysis consisted of correcting for the above costs with revenue that might be generated by the psychological intervention if the intervention had been provided as a reimbursable part of standard care. A 60% reimbursement rate (60 cents on the dollar) was used based on our clinics actual reimbursement rate for similar services actually provided over the year prior to the study. As was calculated earlier, the per-minute cost of providing the intervention was $0.49. If the intervention services were billed as part of standard care using our current clinical rates for psychological services, the charges would break down as follows: an evaluation charge, at $190.00, and three therapy sessions, at $120.00 each. Based on the current reimbursement rate, the per-patient evaluation earning would be $114.00 (190 × 0.60) and per-patient three therapy sessions earning would equal $216 ([$120 × 0.60] × 3). The total charges from third-party payer for providing the psychological intervention would be $330.00. When this charge is broken down further in to a per-minute charge (by dividing $330.00 by the 200 min spent for all four sessions) the per-minute charge would be $1.65 (see Table IV). Thus, if we subtract the per-minute cost of providing the intervention ($0.49) from the per-minute earning of the CBT ($1.65), providing the intervention as part of standard care to melanoma patients would generate $1.16 of revenue per minute. In contrast, patients' whose distress drives them to resort to calling a physician or nurse would cost the hospital $0.41 per min without apparent clinical benefit.

DISCUSSION

These retrospective analyses sought to provide some preliminary fiscal justification for the economic benefit of a psychological and behavioral intervention by examining the cost-effectiveness and cost-offset that might result from the administration of a brief structured cognitive–behavioral therapy to emotionally distressed melanoma patients. This study demonstrated that the cost-offset of such an intervention, if it eliminated only one circumscribed but problematic illness behavior (namely distress-driven phone calls to physicians and nurses) is economically justifiable when compared to standard care. Effectively reducing the level of distress experienced by patients by one GSI T-score point was determined to cost $7.66 for the psychological intervention. By contrast, the cost of standard care for trying to manage a similarly distress group of patients was $402.37 and ineffective as well. Although standard care did not reduce distress in melanoma patients, a comparison of the cost per outcome of the two treatments is still possible. Reducing the distress experienced by melanoma patients who received the intervention, cost $0.49 per min, while standard care to deal with the same distress cost $0.41 per min. Although the CBT costs $0.08 more per min, it is likely that such a psychological intervention would prove economically more cost-effective by reducing other costs associated with medical utilization as previously noted (Chiles et al., 1999; Guthrie et al., 1999). As such, the initial fiscal outlay that would be required to hire a psychologist would likely recoup itself and prove economically viable.

The above findings must be considered in light of some of limitations of the paper. Firstly, the analyses conducted in this paper are retrospective from the standpoint that the study was designed to evaluate the effectiveness of treating distress in melanoma patients and was not designed to determine economic effectiveness. As such, the methodological rigor necessary for prospective cost-effectiveness analyses is not present. It behooves the field of effectiveness research to prospectively incorporate such concepts and variables if behavioral interventions are to become part of standard medical care. It has been pointed out that because the health care industry cannot readily profit from psychobehavioral interventions, they face a greater burden of proof before they are likely to be fully integrated (Jessie Gruman, personal communication). Secondly, the current study utilized estimates to calculate the cost and effectiveness of standard care. Future studies would need to have a priori identification of the costs to be measured and accurately monitor the costs associated with each intervention to effectively deal with this issue. Finally, for simplicity's sake this study made the assumption that successful reduction of emotional distress would eliminate entirely the distress driven illness behavior

(i.e., phone calls to physicians and nurses) in order to better quantify economic impact. We understand this to be a simplification but also accept that such intervention is also likely to produce other more generalized cost-offset benefits not addressed here. Future studies would need to operationalize and track the impact of such interventions on several types of problematic illness behavior in order to better determine the actual cost-offset. Analytical techniques such as structural equation modeling may be useful here. These types of procedures and outcomes thus far have not been routinely incorporated into the treatment literature.

Despite the use of cost estimates in part of the analysis, the analysis did show that not providing an intervention used valuable resources that produced no considerable decrease in distress. To better utilize health care resources it is important to consider that CBT did reduce distress in melanoma patients, and did so at just a few cents over the cost of not providing any mental health services at all. This was true even before taking into consideration factors such as service reimbursement or cost-offset. The findings support the idea that busy doctors and nurses could reduce time spent fielding distress-driven phone calls with a referral for brief problem focused CBT, an activity that would increase provider collaboration. Overall, the results illustrate the potential clinical and economic benefit of incorporating effective psychological and behavioral interventions into standard medical care for at risk patients. Doing so would not only decrease distress levels in patients and improve quality of life, but also possibly decrease distress-driven illness behavior that makes other types of medical service inefficient at best and inefficient at worst.

ACKNOWLEDGMENTS

REFERENCES

Brouwer, W. B., & Koopmanschap, M. A. (2000). On the economic foundations of CEA. Ladies and gentlemen, take your positions! *Journal of Health Economics*, *19,* 439–459.

Caudill, M., Schnable, R., Zuttermeister, P., Benson, H., & Friedman, R. (1991). Decreased clinic utilization by chronic pain patients after behavioral medicine intervention. *Pain*, *45,* 334–335.

Chambless, D. L., & Hollon, S. D. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology*, *66,* 7–18.

Chiles, J. A., Lambert, M. J., & Hatch, A. L. (1999). The impact of psychological interventions on medical cost offset: A meta-analytic review. *Clinical Psychology: Science and Practice*, *6*(2), 204–220.

Cummings, N. A. (1991). Arguments for the financial efficacy of psychological services in health care settings. In J. J. Sweet (Ed.), *Handbook of clinical psychology in medical settings* (pp. 113–126). New York: Plenum.

Cummings, N. A., & Follette, W. T. (1968). Psychiatric services and medical utilization in a prepaid health plan setting: Part 2. *Medical Care*, *6,* 31–41.

Derogatis, L. R. (1992). *The Brief Symptom Inventory (BSI) Administration, scoring and procedures manual-II.* Clinical Psychometric Research, Inc., Baltimore.

Derogatis, L. R., Morrow, G. R., Fetting, J., Penman, D., Piasetsky, S., Schmale, A. M., et al. (1983). The prevalence of psychiatric disorders among cancer patients. *JAMA*, *249,* 751–757.

Drummond, M. F., & Maynard, A. (1993). *Purchasing and providing cost-effective health care.* London: Churchill Livingstone.

Evans, W. K. (2000). Cost-effectiveness analysis in oncology. *Praxis*, *89,* 492–496.

Fishman, D. B. (1975). Development of a generic cost-effectiveness methodology for evaluating the patient services of a community mental health center. In J. Zusman & C. R. Wurster (Eds.), *Program evaluation: Alcohol, drug abuse, and mental health services.* Lexington, MA: Lexington Books.

Freedberg, K. A., Geller, A. C., Miller, D. R., Lew R. A., & Koh, H. K. (1999). Screening for malignant melanoma: A cost-effectiveness analysis. *Journal of the Academy of Dermatology*, *41*(5), 738–745.

Goldie, S. J., Weinstein, M. C., Kuntz, K. M., & Freedberg, K. A. (1999). The costs, clinical benefits, and cost-effectiveness of screening for cervical cancer in HIV-infected women. *Annals of Internal Medicine*, *130,* 97–107.

Guthrie, E., Moorey, J., Margison, F., Barker, H., Palmer, S., McGrath, G., et al. (1999). Cost-effectiveness of brief psychodynamic-interpersonal therapy in high utilizers of psychiatric services. *Archives of General Psychiatry*, *56,* 518–526.

Heywood, P. L., Blackie, G. C., Cameron, I. H., & Dowell, A. C. (1998). An assessment of the attributes of frequent attenders to general practice. *Family Practice*, *15,* 198–204.

Holland, J. C. (1997). Preliminary guidelines for the treatment of distress. *Oncology*, *11,* 109–114.

Jacobs, D. (1988). Cost-effectiveness of specialized psychological programs for reducing hospital stays and outpatient visits. *Journal of Clinical Psychology*, *21,* 23–49.

Kennedy, C. A., Gray, A. M., Denman, A. R., & Phillips, P. S. (1999). A cost-effectiveness analysis of a residential radon remediation programme in the United Kingdom. *British Journal of Cancer*, *81*(7), 1243–1247.

Meltzer, D. (2001). Addressing uncertainty in medical cost-effectiveness analysis. *Journal of Health Economics*, *20,* 109–129.

Russo, D. C., & Howard, H. A. (1999). The evolving role of clinical psychology in health care systems. *Clinical Psychology: Science and Practice*, *6,* 232–238.

Stefanek, M. E., Derogatis, L. P., & Shaw, A. (1987). Psychological distress among oncology outpatients. *Psychosomatics*, *28,* 530–539.

Trask, P. C., Paterson, A. G., Hayasaka, S., Dunn, R. L., Riba, M., & Johnson, T. (2001). Psychosocial characteristics of individuals with non-stage IV melanoma. *Journal of Clinical Oncology*, *19*(11), 2844–2850.

VandenBos, G. R., & Deleon, P. H. (1988). The use of psychotherapy to improve physical health. *Psychotherapy*, *25,* 335–342.

Yates, B. T. (1994). Toward the incorporation of costs, cost-effectiveness analysis, and cost-benefit analysis into clinical research. *Journal of Consulting and Clinical Psychology*, *62*(4), 729–736.

Yates, B. T. (1998). Formative evaluation of costs, cost-effectiveness, and cost-benefit. In L. Bickman & D. J. Rog (Eds.), *Handbook of applied social research methods*. Thousand Oaks: Sage.