

Social Work Services on an Organ Transplantation Program: A Preliminary Cost-Benefit Analysis

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Objective: A prospective clinical trial was conducted to measure the effectiveness and cost-benefit of social work clinical practice on a multi-organ transplant program. Method: Recipient financial, clinical, and quality-of-life data were collected for patients who received organ transplants in 1995 (N = 105) at Integrus Oklahoma Transplantation Institute. Results: The income produced for the organization exceeded the cost of providing social work services but demonstrated only a limited ability to reduce the future cost exposure for the program. Prioritized clinical practice identified those at greatest need of social work services, provided the framework for interventions and reporting of outcomes, while maintaining a patient's quality-of-life. Conclusions: The outcome-based clinical research has resulted in policies and clinical practice patterns that are both beneficial for transplant patients and meet the economic and clinical mandates of the employing organization.

The relationship between social work and health care in the United States has beginnings that extend from the late 1800s (Bracht, 1978). Since the 1960s and the development of transplantation medicine (i.e., heart, kidney, liver), social work involvement has expanded rapidly.

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In virtually all transplant programs, social workers have been available to help patients and families meet the challenges of organ transplantation. From the time of initial referral, through assessment, waiting period, transplant admission, and post-transplant follow-up, it is the social worker who is primarily responsible for patient and family psychosocial assessment, treatment, and rehabilitation (Olbrisch & Levenson, 1991).

With the reengineering of health systems via case management, standard clinical protocols, and/or patient-focused care, the evolving environment in which transplant social workers function is extremely dynamic (Kayser, Hansen, & Groves, 1995). In fact, health care reform has produced an environment where social work clinicians often function with ambiguous practice expectations. To social workers, the term *value* refers to the inherent worth, dignity, and uniqueness of all people, whereas to hospital administrators, insurance executives, and government officials, it has a purely economic connotation.

Previously, medical social work research emphasized productivity (the number of patients seen) and efficiency (the number of patients seen per time unit) as a way to prove the value of its activities, largely ignoring measures of its effectiveness (improved outcomes). Such an approach is inadequate in the transplant environment, where social workers are expected to meet the ever increasing needs of patients and the outcome mandates of insurance carriers, restructured organizations, and/or government regulations (Paris, Tebow, Dahr, & Cooper, 1997). As a result, the transplant social work literature is one of the few areas where the outcome of clinical intervention has been reported.

Published studies have shown that transplant patients benefit from social worker clinical involvement by (a) reduced morbidity at 1 year for recipients at initial high psychosocial risk (Tazelaar, Prieto, Lake, & Emery, 1992), (b) reduced family dysfunction and better overall adjustment (Suszycki, 1986), and (c) reduction in stress-related problems (Gier, Levick, & Blanzia, 1988).

Tazelaar et al. (1992) found that, of 82 heart transplants done in a 3-year period, 27 were considered to be at high psychosocial risk. *Risk* was defined as cigarette smoking, alcohol abuse, unsupportive social system, and personality or affective disorders. On identification, these patients were referred to the social worker for psychotherapy and group support. At 1 year, posttransplant mortality and morbidity rates were similar between the risk and no-risk groups.

Suszycki (1986) reported improved coping skills among patients who attended social worker-led transplant psychoeducational support groups. Offering groups to transplant patients was, the author argues, both a practical and effective way of reaching large numbers of patients and helping them with diverse illness-related concerns.

Gier et al. (1988) evaluated the effect of a stress reduction program with heart transplant patients. She highlighted the importance of stress reduction as a part of the overall medical treatment plan. Results indicated that various stress reduction techniques and methods offered through a social worker-led educational program helped prepare patients for the multitude of stressors encountered during the transplant process.

In sum, we believe that the transplant social work literature, with its emphasis on the effectiveness of clinical intervention, is one of the few areas that affords the opportunity to test the value of social work clinical practice. The present study focuses on the specific policy measures that resulted from social work outcome research, the resulting treatment models, their effectiveness, and the costs versus benefits that resulted at Integris Oklahoma Transplantation Institute for the year 1995.

Transplant program. Heart and kidney transplants have been performed at Integris Oklahoma Transplantation Institute since 1985 and 1987, respectively. A liver transplant program was initiated in 1992. As of December 31, 1994, a total of 479 patients had undergone organ transplantation. During 1995, there was a total of 240 patients evaluated for transplantation, with 105 being transplanted.

The current actuarial 1-year survival rate of patients undergoing heart, kidney, or liver transplant is 94%, 90%, and 91%, respectively (Cooper et al., 1994). The 5-year survival rate of heart, kidney, or liver recipients is 80%, 75%, and 80%, respectively. When compared with 1- and 5-year figures reported from the International Register of the International Society for Heart and Lung Transplantation and/or United Network for Organ Sharing (UNOS), our results are consistently more than 10% better than the comparable national average.

Since 1988, the social workers assigned to the author's institution have been actively involved in both the clinical and research aspects of practice. Clinical responsibilities include an initial psychosocial evaluation to help determine appropriateness for transplantation; ongoing monitoring; and referral for pre- and posttransplant counseling, rehabilitation services, and/or community resources. The research component was directed toward identifying patient needs and developing prioritized intervention strategies, which were intended to produce improved patient outcomes. The following study is an attempt to determine whether this approach has resulted in improved return-to-work rates and/or reduction of long-term morbidity risk while meeting the institutional goals of maximizing the use of staff time and improving patient satisfaction.

METHODOLOGY

Patient data were collected independent of the authors by either the financial or transplant coordinators. Data were gathered regarding (a) reimbursement of social worker salaries and billing for completed psychosocial histories, (b) indirect income from the implementation of return-to-work policies, and (c) the effect on patient outcomes and resulting quality-of-life from our clinical practice patterns. Patient financial data for the year 1995 were collected. Psychosocial outcome data were collected for 1995 and 1996 from the heart transplant patients.

There are two direct ways in which social workers produce income. One, is the allocation of pretransplant time (i.e., salary plus benefits) that UNOS allows transplant centers to factor into organ retrieval charges (reimbursement of independent organ procurement organizations and histocompatibility laboratories, 1990). Financial services reported that 55% of social worker salaries was the figure that was factored into organ retrieval charges. The second way social workers produce income is by billing Medicare for psychosocial histories on patients at approved centers. With the heart, kidney, and liver programs being Medicare approved since October 1987, January 1988, and January 1996, respectively, we projected income for all heart and kidney Medicare psychosocial histories based on 80% reimbursement for billed charges.

Another less obvious indirect source of income is the potential for increased insurance payment that results from private insurance coverage for those who returned to work when compared to Medicare/Medicaid payment. Since 1989, it has been the policy at the author's institution to encourage posttransplant employment. This has resulted in an increase from 34% to 52% of patients being employed posttransplant (Paris, Tebow, et al., 1997). Patients who maintained their pretransplant job were not included in the financial figures given, unless this resulted from social work intervention. Only in cases where social workers had been involved are the results shown. Prescription drug coverage is such a major issue for transplant patients that we included the staff time saved for those who had private insurance (including prescription coverage) and did not require help completing indigent drug applications.

A longitudinal study conducted at the author's institution on 60 consecutive heart transplant recipients from 1989 to 1991 indicated long-term outcome risk based on the initial social work assessment (Paris, Muchmore, Pribil, Zuhdi, & Cooper, 1994). This study found that patients with any substance abuse history and/or a psychological diagnosis had the same mortality risk as other patients. However, they did have increased morbidity at 2+

years, as measured by greater risk of hospital readmission for greater length of time. As a result, social workers' clinical practice has sought to identify those who meet this higher risk profile and provide prophylactic counseling services during regularly scheduled outpatient visits. It was assumed that this type of practice was preferable to waiting for problems to arise and intervene with crisis intervention services. The data reported compares data from the 1994 study (projected) and current 1995 patient (actual) information.

In an attempt to determine the impact that social workers' clinical practice may have had on patient satisfaction, we also collected quality-of-life data. Quality of life was measured using a Likert-type scale developed by Young and Longman (1983). Recipients were instructed to rate their current quality of life on a scale from 1 = *poor* to 6 = *excellent*. The 19-item survey version used had originally been adapted for use with heart transplant recipients by Lough, Lindsey, Shinn, and Stotts (1985). Test-retest reliability was significant ($\alpha = .95$). Scores on the scale were reported as a mean average and had established validity with other measures that identified patients with decreasing pain, less depression, and the ability to cope better with stress (Ferrans, 1990).

The selection of outcome measures was based on social work concepts that have shown (a) social work counseling was more cost-effective when compared with other psychological treatments with mild to moderately depressed clients and (b) the benefits of social work services outweighs the cost of such services in a hospital emergency room (Ponto & Berg, 1992; Scott, Moon, Blacker, & Thomas, 1994).

All data were analyzed by use of analysis of variance or chi-square procedures. Statistical analysis was set at $p < 0.01$ to reduce the chance of Type I error.

RESULTS

Costs

The total cost of salary and benefits for the 2.5 full-time equivalent (FTE) social worker positions for 1995 was \$115,704.

Direct Income

Reimbursement for 55% of social work salaries totaled \$63,637. With a total of 90 Medicare patients being evaluated for transplant in 1995, this

produced a projected income of \$4,320.00 (90 assessments \times \$60.00 per history \times 80% reimbursement).

Return to Work

In 1995, 115 heart, kidney, and liver transplant patients were working who otherwise would be drawing disability income. We found that 92 (80%, 92/115) of those with whom social workers were working had some form of private insurance. When compared to the reimbursement rate for Medicare/Medicaid, we found a \$284,000 increase in income (mean average \$3,087 per patient) directly attributable to their private insurance status.

In addition, most patients with private insurance will not require staff time to complete indigent drug applications. Records indicated that it took an average of 6 hours (per patient/per year) to complete indigent drug applications. This resulted in 552 hours (6 hours \times 92 with prescription coverage) of staff time being saved.

Prioritized Clinical Practice

Of the 24 heart transplant patients, 14 had no pretransplant psychosocial risk factors (see Table 1). These patients had a greater number of first-year outpatient visits than had been projected but slightly fewer during the second year. The projected and actual number of hospital readmissions and average length of stay had only minimal differences for this group. Although the psychosocial risk group ($n = 10$) had reduced their risk of hospital admission by nearly half, from 2.0 admissions to less than 1 (.8), this was accompanied by more than doubling the average length of stay from 4 to 10 days. They significantly reduced the average number of first-year outpatient visits by seven ($p < 0.01$) but had virtually the same number for the second year as had been projected.

Quality of Life

Heart transplant patients' quality of life was rated as very good (mean = 5.0, $SD = 1.1$) with only minimal (nonsignificant) score variation between the four groups surveyed. Those who returned to work reported the highest mean quality of life, 5.4, followed closely by those with and without psychosocial risk, 5.1, and the prioritized treatment group, 5.0 (data not shown).

Overall, the most positive aspects were increased self-confidence, independence, improved decision making, better relationships with family members, and an improved ability to achieve both now and in the future. Areas of

TABLE 1: Comparison of Projected and Actual 1995 Outcomes

	<i>Based on Psychosocial Risk</i>	
	<i>No Psychosocial Risk (n = 14)</i>	<i>Psychosocial Risk (n = 10)</i>
Mean outpatient visits, Year 1		
Actual	30	26
Projected	27	34**
Year 2		
Actual	16	19
Projected	17	18
Mean number of hospital readmissions		
Actual	< 1 (.7)	< 1 (.8)
Projected	1	2
Mean length of stay per readmission		
Actual	9 days	10 days
Projected	7 days	4 days

** $p < .01$.

primary concern were work, finances, social activities, religious involvement, and a limited ability to resume hobbies.

DISCUSSION AND APPLICATIONS TO SOCIAL WORK PRACTICE

If clinical interventions are viewed as “core techniques of the helping professions” (Price, 1986, p. 7), then certainly outcomes must be the measurement for the adequacy of the interventions. The implication of this study is that, from a financial perspective, reimbursement for social work salaries coupled with implementation of return-to-work policies resulted in income greater than the cost of providing social work services. From a cost-exposure perspective (i.e., number of yearly outpatient visits, number of hospital readmissions, average length of stay per readmission), which is employed with reduced fee or fixed charge (managed care) contracts, the results are less than ideal. However, patients reported similar quality of life regardless of the type of social work clinical practice.

Although the financial numbers were encouraging, the authors acknowledge that the changing health care environment may negatively influence the financial benefits reported. For example, the current results include about 20% with the payment source from managed care (various forms).

Unreported data projections indicate that once managed care contracts account for 60% to 70% of coverage (based on current contracts), or if UNOS does not allow for the allocation of social work salaries, the financial benefit to the institution would be minimal.

Patient noncompliance with regard to a number of factors, including substance abuse and a failure to take medications regularly, are major risk factors associated with morbidity and mortality (Shapiro, 1990). Historically, it was assumed that the best way to reduce long-term mortality and morbidity was the selection of "good candidates" (those lacking psychosocial problems) even though there was only a limited amount of research supporting this conclusion. More recently, Shapiro et al. (1995) reported that the pretransplant evaluation might provide key information for psychosocial risk reduction. In a prospective study of 125 consecutive heart transplant patients, he found that in those with a prior history of substance abuse, completion of a treatment program coupled with prolonged abstinence (several months) enhances their chances of a good outcome. Paris et al. (1994) found that a failure to have such a requirement resulted in substance abuse relapse and increased morbidity.

Research conducted at the author's institution found that a patient's failure to take medications regularly resulted primarily from financial restrictions (Sisson, Tripp, Paris, Cooper, & Zuhdi, 1994). The 500+ hours (.25 FTE) of staff time saved from return-to-work policies was time that was spent to secure medications from indigent drug programs. These aggressive policy measures helped produce medication noncompliance rates less than half the 25% that had been reported by Dew, Roth, Thompson, Kormos, and Griffith (1996). This confirms the belief that any modifications in one psychosocial area will have beneficial effects on medical compliance. To optimize transplant results, every effort must be made to ensure that the patient is provided with the necessary postoperative medications.

Once patients are accepted as transplant candidates, any attempt to prioritize and intervene in cases where they do not perceive a need or recognize the existence of a psychosocial problem results in only a limited chance they will use clinical services. For example, 8 of the 10 patients identified by social work staff as being at psychosocial risk were referred for psychotherapy due to adjustment or family problems, but only 3 chose to participate. This would be consistent with Hauser, Williams, Strong, Ganza, and Hathaway (1991), who reported that there is only limited reliability between staff and patient perceptions of patient needs and that patients will almost always respond to their own subjective evaluation.

Those who did take advantage of psychotherapy (prioritized group, $n = 3$) had a reduced chance of hospital readmission (.4 to .8 admissions per patient)

and shorter average length of stay (6 days to 10 days) compared to those who refused counseling (data not shown). Similar results have been reported with larger, more diverse patient populations. In a 1993 study analyzing medical claims for 6.7 million Blue Cross Federal Employees, it was demonstrated that medical use significantly decreased after psychotherapy for those considered at psychosocial risk (Appleby, 1996). The study concluded that when patients receive supportive counseling and are linked to appropriate community resources, they use fewer medical services.

Our study numbers are too small to draw any clear conclusions and must be considered highly preliminary. This does suggest, however, that the key element may not be psychosocial risk itself but patient recognition and agreement to participate in a treatment regimen. An important question may be whether the "at risk" group would have been more likely to participate in psychotherapy if it was provided by a transplant social worker. Tazelaar et al. (1992) found that when provided by transplant social workers, psychotherapy was effective in reducing morbidity in those patients thought to be at psychosocial risk. At the author's institution, patients are usually referred to an outside agency for all counseling services. This policy may need to be reconsidered, given the limitation it may place on the transplant social workers' ability to positively affect morbidity.

Overall, patients were very satisfied with their quality of life. Patients who had only minimal social work involvement (no psychosocial risk) reported similar quality of life to those who had been followed closely (psychosocial risk). These findings are encouraging, given previous reports that patients at psychosocial risk have significantly reduced quality of life (Lough et al., 1985). Also, there was no significant benefit to quality of life from psychotherapy (prioritized group) versus social work supportive follow-up (psychosocial risk). This suggests the efficacy of the psychosocial risk-no psychosocial risk practice model from a quality-of-life perspective.

It was surprising that the return-to-work group did not report significantly better quality of life in the areas of job satisfaction, financial issues, future outlook, and achievement. Other authors (Lough et al., 1985; Shapiro, 1990) have reported that when a patient returned to work, quality of life improved. One possible explanation could be that we looked only at patients who found new employment; other authors reported data on those who returned to previous employment. The implication is that the effort required to secure new posttransplant employment may have also exposed patients to additional adjustment issues that negatively affected their quality of life.

Also, it is important to note that of the 115 who returned to work, 17 (15%, 17/115) secured new posttransplant employment (data not shown). There are numerous studies that have reported an employer would be reluctant to hire a

patient after transplantation (Evans et al., 1984; Lough, 1988; Paris, 1990). Our results confirm previous findings (Paris et al., 1993; Paris, Tebow, et al., 1997) that indicate when social work was actively involved with the transplant population, 12% to 15% would be able to secure new posttransplant employment. With the passage of the Health Insurance Portability and Accountability Act and the elimination of preexisting medical conditions, which guarantee the portability of health insurance, the number of disabled patients expected to secure new employment will increase dramatically (Paris, Harrison, Diercks, & Jones, 1997). As evidenced by our results, transplant social work expertise will be a major component in making this a reality.

CONCLUSION

We believe that the outcome-based clinical research conducted at the author's institution has resulted in policies and clinical practice patterns that (a) at present produce income for the employing organization that exceeds the cost of providing social work services, (b) maximize the use of staff time by identifying those in greatest need of social work services, (c) provide a framework for social work interventions and the reporting of outcomes, and (d) will do so while maintaining a transplant patient's quality of life.

These findings also demonstrated only a limited ability for social work to reduce the cost exposure of the transplant program. Whether this is due to being overly optimistic about the importance of the services provided or limitations imposed by our own definitions, one could only speculate. Regardless, the rapid transition to managed care and the desire to reduce health care costs will require that social workers document the benefits (outcomes) of their practices (Ell, 1996). Solely reporting patient or family needs is inadequate in a health care environment driven by the outcome mandates of insurance carriers, restructured organizations, and/or governmental regulation (Paris et al., 1996). Certainly, transplant social workers already contributed toward these goals, but much remains to be accomplished.

We also recognize that there are limitations associated with this study that one must take into consideration: (a) replication of study results may be difficult because outcome measures were based on data from one transplant center and have, only to a limited extent, been replicated; (b) data are from a small sample monitored for a short period of time; (c) each transplant program may present with a unique set of problems that we did not encounter; and (d) our measurement of clinical effectiveness may have been too broadly defined and/or influenced by factors outside a social worker's control.

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