Introduction

Psychology Intervention, i.e., evaluation and treatment by Psychologists, can reduce costs of medical rehabilitation. With rising costs of health care and rapidly shrinking resources, it is imperative that expenditures are carefully monitored for effectiveness and efficiency. The great majority of studies of Psychology intervention have focused on that aspect of effectiveness which relates to outcome as a function of procedures. They are studies of change in quality of life as the result of treatment. This is a critical question, and justifiably must be primary. The question of efficacy has been resolved to the satisfaction of most researchers. Psychological evaluation is valid in defining character and functioning, and treatment is effective in improving quality of life.

A major consideration, as stated above, is whether psychology intervention is cost effective, and indeed, whether it has an impact on the over-all cost of care. A substantial body of information has been accumulated on this question. While most of the studies have been done with acute medical patients, they probably are generalizable to rehabilitation settings. The studies of rehabilitation have been consistent with those of acute settings.

Models of Cost Analysis

First of all, it is helpful to have a brief description of the models used in determining or comparing costs of treatment. This becomes an exceedingly complex question, especially when an attempt is made to determine the value of benefits received. There are three commonly used models of analysis.

The first is Cost-Utility Analysis, which compares estimates of costs of different programs to achieve a given result. Since it is based upon estimates, it is not precise, and is used when time or budget prohibits comparison of model programs. The second is Cost-Benefit Analysis. This analysis compares total cost of a service, in monetary terms, to total benefits, also reduced to monetary terms. Such things as increased income as a result of increased well-being enter into this analysis. This type of reduction to monetary terms is also very difficult in evaluating health issues. The third analytic model is the Cost-Effectiveness Analysis model. This model compares actual program costs to achieve some specific goal. This is the most common approach to assessing cost issues of programs. Usually the goal is some agreed-upon improvement in health, and the question concerns the most efficient way of achieving that end. Another concept which is critical is that of "offset effect." The offset effect is a reduction in the use of a service as a result of the provision of a less costly service. It is a critical value in cost comparisons, and should be considered in Cost-Effectiveness Analysis.

Review of Representative Studies

Psychology Intervention Concurrent with Medical Treatment

One study of cost-effectiveness describing an offset effect was done at Kaiser-Permanente. The data covered a 20-year span and demonstrated a substantial reduction in use of expensive medical services by patients who were provided with psychotherapy. Among the observations was that 60% or more of physician visits were by patients manifesting somatized emotional distress. These patients were more effectively treated by psychotherapeutic intervention for the emotional distress. In addition, patients with diagnosed medical conditions showed reduced use of medical services when using psychotherapy services. There has been some criticism of the methodology of this study.

However, a later study, which was a meta-analysis of 58 controlled studies, and an analysis of claims files for the Blue Cross and Blue Shield Federal Employees Plan for 1974-1978 also found a reduction in the use of medical services associated with outpatient psychotherapy. The clearest effect was in the reduction of inpatient medical costs. An earlier study of the Blue Cross/Blue Shield data had reached the same conclusions. Another study showing a significant offset effect was of ambulatory care history of patients with diagnosed mental disorders. Mental health treatment showed offset savings for other medical treatment, and the savings were related to severity of mental disorder. The study pointed out that the cost of care still remained higher for those with mental disorders than for those without a diagnosed mental disorder. The implication is that health care of patients with mental disorder is costlier than for those without mental disorder, but the cost can be reduced by provision of mental health care. A more recent study, was based on claims of families covered by Aetna's federal employees Health Benefit Program from 1980-1983. It showed that total health care costs for those receiving mental health treatment were significantly higher than costs for a comparison group. However, costs dropped significantly after the initiation of mental health treatment and continued to drop through the course of the period studied. An interesting point in this and other studies is that the decrease in cost is greatest in the 45 years and older sample. Since this is a rapidly growing segment of the population, savings for this group has great impact.

Psychology Intervention Directly Applicable to Rehabilitation

In the studies cited above, mental health intervention was more or less incidental to the medical health care approach, and the effects must be weighed in the light of the circumstances surrounding the specific population. In other areas, such as physical rehabilitation, where the psychological inter-
vention is a designed part of the treatment program, one might expect to see even stronger effects. There are four related areas of focal psychological programming which have particular application to physical rehabilitation. These are the areas of prevention of physical disorder, compliance with treatment regimen, adjustment to disability, and direct treatment for physical symptoms.

Prevention of Physical Disorder
Psychology programs have been successful in altering smoking behavior, reducing weight, changing alcohol consumption, and modifying a host of behaviors which put people at risk for developing or exacerbating physical illness. The list of risky behaviors successfully treated by psychology is very long and includes work in such areas as accident prevention and prevention of violence. The cost effects of these preventive programs, in particular, are difficult to assess directly and for the most part must devolve to cost-utility or cost-benefit analyses with their inherent problems. However, the implications for rehabilitation are clear. If the behavior which results in physical dysfunction can be changed, rehabilitation costs are reduced, and the costs of medical care are reduced.

Compliance with Treatment Regimen
Compliance with treatment regimen is a very serious problem and can have a major impact on the course of rehabilitation. One problem area is adherence to medication schedules. Estimates place the rate of non-compliance at over 20%. Behavioral programs have shown an increase in compliance from 81% to 98% in one study and from 83% to 100% in another. By increasing compliance and self-monitoring behavior, it is possible to shift treatment to an outpatient setting, thus reducing cost of treatment. The implications for rehabilitation are clear, since progress is highly dependent on cooperation with OT, PT, and other treatment requirements, and rehabilitation patients must be motivated to comply with their program. There is no way to "force" a patient to comply. Since non-compliance is not a simple matter of stubbornness, or lack of available information, the techniques of dealing with it are subtle. Frequently non-compliance is a reaction to a disastrous blow to self-image as can occur with spinal injury. In a brain injured patient, non-compliance may be a result of cognitive changes which inhibit understanding. By evaluating neurobehavioral status, and psychodynamic status of the patient the psychologist can design a treatment approach which will increase compliance. Increased compliance reduces complications, and speeds progress, resulting in shorter hospital stay, and greater independence at discharge.

Facilitation of Adjustment to Disability
Facilitating adjustment to disability is an obvious area of psychological intervention. It is offered in a crisis management format, with the specific goals of reducing emotional distress caused by the disability, promoting acceptance of the specific disability, and removing psychodynamic barriers to the maximization of potential of the patient at each stage of the physical rehabilitation process. The tools used include the crisis-oriented approaches to psychotherapy, behavioral management programs, and vocational adjustment programs aimed at returning the patient to an economically productive role in society. The emphasis on returning patients to the work force is of critical importance to employers, and has been demonstrated to be a result of psychology programming.

Alternative to Medical Treatment
As an alternative to medical treatment for a number of problems, psychological approaches can provide less expensive solutions, often in cases where traditional medical treatment has been ineffective. An example is pain for which no medical treatment may work, such as phantom limb pain after amputation. Phantom limb pain and other chronic pain have been treated very effectively using behavioral techniques. Other conditions which are effectively treated with behavioral techniques are back pain, muscle spasms, cardiovascular dysfunction, respiratory problems, and headache, and a host of disorders treated cost-effectively with biofeedback. The above does not address areas such as neurobehavioral treatment of brain injured, which is acknowledged to play the major role in returning patients to productive lives in the community.

Characteristics of Psychological Intervention in Rehabilitation
In rehabilitation, psychology intervention tends to be crisis-management-oriented and brief, as described above, rather than long-term. It is not aimed at major personality or character change, but at adjustment to disability. While not strictly a cost-effectiveness issue, the issues of cost projection, and standards of care are important to psychologists, as well as payers for service. Specifically, it is very helpful to know how many contacts to anticipate for a given diagnostic category, i.e., what services may be required over what span of time. This issue is being addressed by more than one organization. For example, the "critical path" concept of treatment planning, which is consistent with the Quality Improvement approach of The Joint Commission on the Accreditation of Health Care Organizations (JCAHO), fosters this type of review of service delivery. This will result in the availability of large databases which will make the development of norms and standards a much easier task than it has been. Plans are being developed to begin linkage of databases to study such issues. The Rehabilitation Psychology Managers Forum is one organization that has begun discussing sharing of database information in a cooperative study.

This should be a help in cost projections as well as utilization review. It should be possible to provide services with a high predictability of cost. The nature of services provided in connection with physical rehabilitation is that they are circumscribed and time-limited, and therefore will be predictable by physical diagnostic category. This will remove them from the categories of services for chronic or ill-defined conditions which are so problematic for insurers.

Conclusion
In summary, there is substantial research which indicates that psychologists not only can provide services which promote the well-being of patients, but also can significantly reduce over-all cost of medical care. In addition, psychology pro-
grams have been successful in returning the physically impaired patient to the work force. Psychologists in physical rehabilitation can help reduce costs and also help bring about the conditions of predictability of costs which are necessary for planning. It is incumbent upon Psychology to share with the Rehabilitation community information on its role in rehabilitation. It is also critical for Psychology to maintain a dialogue which helps to sharpen the definition of psychological intervention for groups with a vital interest in the rehabilitation system.

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