EFFECTS OF FUNDING ON ELECTROCONVULSIVE THERAPY IN CALIFORNIA

A Thesis
Presented to the
Faculty of
San Diego State University

In Partial Fulfillment
of the Requirements for the Degrees
Master of Public Health
and
Master of Social Work

by
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Spring 2011
SAN DIEGO STATE UNIVERSITY

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April 28, 2011
Approval Date
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DEDICATION

This thesis is dedicated to my father.
ABSTRACT OF THE THESIS

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The purpose of this study was to evaluate the impact of the Mental Health Parity Act (MHPA) of 1996 on electroconvulsive (ECT) therapy in California. The study seeks to understand how this legislation, which increases annual and lifetime dollars for mental health services impacted a high cost behavioral health treatment (ECT) and how trends in the patient demographics changed from 1996 to 2000. The study investigates the patient demographics, diagnosis, length of stay, and payer category differences over a four year period. Additionally, literature was reviewed regarding the history of ECT use, characteristics of the patients, diagnosis, economic trends, utilization, payment type, state regulations, and the effectiveness of treatment. The literature also defines the Mental Health Parity Act (MHPA) of 1996 and how it may affect ECT treatment.

This is a retrospective, descriptive study involving data aggregation and analysis from the California Office of Statewide Health Planning and Development (OSHPD) patient discharge data. Descriptive statistics were used in the analysis to identify any trends in patient demographics, diagnosis, length of stay, and payer type from 1996 to 2000.

The descriptive statistics demonstrated that age, gender, race, and diagnosis were consistent for 1996 and 2000 with insignificant variations. Women were the primary recipients with a major diagnosis of depression. The average age of patients receiving ECT in both 1996 and 2000 was 57. There were minor variations among ethnicity and race between 1996 and 2000. Major diagnosis remained stable in that major depression was the most significant diagnosis followed by paranoid schizophrenia, bipolar disorder, and schizoaffective disorder for both 1996 and 2000.

Length of stay for patients receiving ECT had a significant change from 1996 to 2000, decreasing by three days. This may be a result of a number of factors including the prompt initiation of ECT, the movement of inpatient ECT to outpatient ECT and its effectiveness in treatment.

Other significant findings were the changes in payer categories from 1996 to 2000 for patients receiving ECT. The most significant changes were in the Medicare, Medi-Cal and private coverage categories. ECT utilization appears to be highest among government funded payment sources in both years. The third most prevalent category was ECT patients under managed care. Utilization went up 24.5% from 1996 and 2000. This significant increase may suggest that the MHPA of 1996 had significant impacts on mental health services, specifically the use of ECT.

The analysis and results were discussed with the implications being that the MHPA of 1996 may have had significant effects on specific mental health treatments. The MHPA of 1996 gave parity to mental health benefits, increasing annual and lifetime limits for
behavioral health services. This Act would potentially have a great impact on ECT since it is a relatively high cost treatment, which would allow patients in the private payer category to have access to an unusually expensive treatment.

The results of this study may have meaningful implications for managed care companies and policy makers. The results provide additional support for ECT as an effective treatment to not only reduces length of stay and overall costs, but to provide an appropriate and valuable treatment to patients who may not have had access to it prior to the MHPA.
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ACKNOWLEDGMENTS

I would like to express my gratitude and appreciation to my chairman, Dr. Alma Koch for her guidance and assistance and for all her energy and support throughout graduate school as well as her continued support throughout the thesis process. She was not only an instructor but a mentor offering endless support over the years. I would also like to thank Dr. Daniel J. Finnegan for serving on my thesis committee and special thanks to Dr. Tracy L. Finlayson for jumping in quickly and providing consultation and guidance.
CHAPTER 1

INTRODUCTION

Over the past fifty years there have been numerous changes in the types of treatment and available reimbursement for treatment in the area of behavioral mental health. The advent of managed behavioral health in private insurers as well as government funded programs such as Medicare and Medicaid coupled with legislation aimed to put mental health coverage equal to that of medical services have had dramatic effects on the type of care received. As management of behavioral health services began containing costs, treatment modalities began to shift to accommodate new reimbursement guidelines. Treatment began shifting from long term hospitalizations and extensive psychotherapy to acute care services and outpatient treatment (Goldman, Frank, & McGuire, 1994). Mental health coverage was very limited for those under private insurers and the government responded by passing legislation in the hopes to provide increased accessibility to mental health services.

Reimbursement for acute psychiatric care expanded in 1966 under Title XVIII of the Social Security Act and the inception of Medicare as a social health insurance program for those over age 65 (Talbott & Hales, 2001). In 1972, the program expanded the design to provide medical care to include younger disabled people (Talbott & Hales, 2001). This increased the access to private psychiatric services dramatically. The original cost-based reimbursement as well as Medicare’s generous reimbursement of capital outlays and debt services made the mental health care market attractive to private psychiatric facilities (Talbott & Hales, 2001).

As healthcare expenditures skyrocketed, policy makers attempted to contain costs and limit services by imposing an alternative payment system. In 1982, Medicare shifted with the passing of the Tax Equity and Fiscal Responsibility Act (TEFRA) and cost-based retrospective payments were changed to a prospective payment system based on Diagnostic Related Groups (DRGs) (Gottlieb, & Shtasel, 2001). Currently Medicare reimbursement for psychiatric care is calculated from a target rate, which is based on resources used during a base year. If the per case cost expenditure exceeds the target rate, the hospital absorbs the
loss. If the per case cost is less than the TEFRA rate, the hospital receives an incentive, retaining up to 50% of the difference (Talbott & Hales, 2001).

In 1965 Congress enacted Medicaid, which was the welfare medicine plan to reimburse health services of the indigent through state and federal matching funds (Gottlieb, & Shtasel, 2001). Medicaid would not reimburse freestanding facilities but would reimburse acute care provided in general hospitals, as well as long-term care of the indigent. Stipulations in Medicaid reimbursement led to a shift from state funded hospitals to long-term skilled nursing facilities. Nursing homes became the long-term psychiatric facilities for the chronically mentally ill, while general hospital psychiatric services became the mainstay of acute psychiatric treatment (Goldman, Feder, & Scanlon, 1986).

**INCREASED COST OF MENTAL HEALTH TREATMENT**

Medicaid and Medicare are the greatest sources of funds for public mental health services (Rodenhauser, 2000). However, reduction in payments for medical services (receiving fewer dollars per year per covered individual) forces providers to increase productivity and/or decrease costs while continuing to deliver an acceptable level of care that minimizes risk of costly illness relapses or litigation. The government funded programs including Medicare and Medi-Cal began managing utilization in treatment in the 1980s.

Medi-Cal is the California Medicaid program. It is jointly administered by the California State Department of Health Care Services and the Centers for Medicare and Medicaid Services (CMS), operating as a Medical Assistance Program under Title XIX of the Social Security Act (Department of Health Care Services, 2007, para 1).

Managed Medicare and Medicaid struggles to reduce costs by reducing the access to expensive diagnostic procedures, reducing access to expensive treatments, constricting the frequency of treatments and decreasing reimbursement for diagnostics and treatments. The number of psychiatric inpatient admissions has decreased by approximately 35% from 1991 to 1996 (Rodenhauser, 2000). Average inpatient stays have declined from 17 days in 1991 to 8.5 days in 1996 (Hay Group, 1998). Currently Medicare pays for an average or target rate of eight inpatient psychiatric inpatient days at a time, while Medi-Cal pays for days and lengths of stay based upon acuity. As long as acuity and other criteria for an inpatient stay are met, Medi-Cal will reimburse. Physicians cope with reductions by increasing the number of patients seen, spending less time with the patients, delegating care to physician’s assistants,
nurse practitioners, psychologists and social workers, and expending fewer resources per patient (Rodenhauser, 2000).

**EFFECTS OF COST CONTROL**

The United States continues to struggle to control costs and adequately handle the upward spiral of health care costs. Pressures to reduce such costs require the examination of current medical practices and cost analysis. In the 1970s there was a large push to managed approaches to health care (Mowbray, Grazier, & Holter, 2002). The term managed care, encompassing Medicare, Medicaid and private health insurance describes the monitoring and authorization of services within the health care delivery system (Mowbray et al., 2002). During the 1980s there was a large push for Medicare and Medicaid programs to carve out mental health services into managed behavioral health organizations (MBHOs) hoping that they would provide quality care at a lower cost (Cuffel, Goldman, & Goldman, 1999). Mental health costs are primarily controlled by managing utilization which ultimately has a direct effect on the type of treatment provided. MBHOs have combated large expenditures by creating regulatory compliance programs that have shifted mental health care from inpatient hospital stays to alternative treatments such as partial hospitalizations and in-home services thus reducing the duration of inpatient treatment (Cuffel et al., 1999).

The shift to managing mental health services has defined the type of services rendered, including electroconvulsive therapy. A study by Hermann, Dorwart, Hoover, and Brody (1995) showed wide variations in ECT use throughout the United States with predictors being the number of psychiatrists, number of primary care physicians, number of private beds per capita, and stringency of ECT state regulations. Urban areas were the most limited (Hermann et al., 1995). Other studies indicate that ECT use overall has declined between 1987 and 1992 (Hermann, Ettner, Dorwart, Langman-Dorwat, & Kleinman, 1999). While overall ECT use has declined ECT use in the Medicare population increased between 1987 and 1992 by 3,560. Increase in use occurred among women, whites, and the disabled population. This same study indicated an increase in outpatient ECT, increasing from 7% in 1987 to 16% in 1992 (Hermann et al., 1999). Other studies indicate that the decline of ECT use ended in the 1980s (Thompson, Weiner, & Myers, 1994). The Thompson and others study (1994) noted that from 1980 to 1986 ECT numbers stayed the same, with women, age
and hospital type being predictors. A survey done by Wise (1996) indicated that managed HMO’s were having profound impacts on psychiatric practices, specifically in high metropolitan areas where penetration rates of HMOs are high. Wise (1996) proclaims that ECT provides a financial incentive for psychiatrist to use because of the decline in other reimbursed care and decreased physician incomes. Many reported frustration over denial of services for managed care utilization reviews (Wise, 1996). Not only did managed care companies begin to have an effect on services rendered in mental health, but there was also a large legislative push in the 1990s for quality mental health services. The government reacted to this push by passing the Mental Health Parity Act of 1996.

**Mental Health Parity Act of 1996**

Since the advent of managed care in the mid 1980’s, there has been a significant decrease in spending for behavioral health services. According to a study done by the Department of Health and Human Services (DHHS) in 1998, spending declined from 6.6% in 1987 to 5.6 % in 1997 (USDHHS, 1998). The cost controls put into place by managed care raised concerns regarding the quality of behavioral health care and a number of studies indicated that behavioral health services were compromised (Office of the Legislative Auditor State of Minnesota, 2001). Managed care companies typically did not place limits on medical inpatient or outpatient visits while employer-sponsored mental health plans imposed several limits. Health plans offered by employers provided more coverage for medical services and less for behavioral health care or mental health and chemical dependency services (USDHHS, 1998). In addition to cost concerns, the World Health Organization released a study in 1996, recognizing the important link between mental and physical health. The study revealed that “four of the ten leading causes of disabilities among individuals five years and older are mental health disorders” (Murray & Lopez, 1996). As a result over the growing concern that health plans were establishing unequal benefit structures for mental and physical health, state and federal governments initiated legislation to mandate that insurance companies cover both mental health in the same manner as medical care; this concept is known as insurance “parity.”
Legislation

Congress approved the Mental Health Parity Act (MHPA) in 1996 in an attempt to address inequities of mental health insurance coverage. President Clinton signed the MHPA into law on September 26, 1997, and the law was applied to group health plan years beginning on or after January 1, 1998. The act requires parity of mental health benefits with medical and surgical benefits with regard to setting lifetime coverage limits and annual coverage limits under a group health plan.

Managed Care

Many managed health care organizations, as well as government programs have become reliant upon cost control mechanisms to reduce utilization, length of stay, and overall hospital inpatient costs (Aaron, 1991). In an effort to control costs, managed care has begun to dictate the type and amount of care given to patients. Managed care firms have an overly strong bias against inpatient care and have increasingly denied inpatient admissions and longer lengths of stay (Feldman, 1992). ECT continues to be a controversial mental health treatment modality for those suffering from depression and related psychotic mental health diagnoses. A number of studies have demonstrated its effectiveness in treating major depression and has been associated with shorter lengths of stays when initiated promptly (Rosenbach, Hermann, & Dowart, 1997; Thompson et al., 1994). Because it has been shown to be an effective treatment it is important that patients in different payer categories have equal access to this treatment. As insurance companies, managed care plans, and government programs continue to focus on costs and decreased utilization, it becomes increasingly important to understand the dynamics of how payer category affects treatment and the associated costs and utilization of such treatments. There has been a significant trend in California for mental health patients with government funded insurance to receive ECT in comparison to private insurance companies (Kramer, 1985). The question as to whether payer category is influencing the type of treatment received deserves more attention and research in an effort to maintain quality healthcare standards and equality for those receiving mental health services.

The effects of modern health care funding on mental health care have altered the modes of treatment, the length of treatment, and perhaps the overall quality of care for those
suffering from mental illness. There has been a major shift in both the private and public sectors in the patterns and locus of care. Outpatient treatments have increased drastically, while the locus of inpatient care for psychiatric services has made a shift from state mental hospitals to psychiatric units in general hospitals, community mental health centers and private psychiatric care (Gottlieb & Shtasel, 2001). The result has been a dramatic shift in treatment methods, patterns of practice, legal decisions regarding patients and financing of care. Insurance company’s healthcare plans that reimburse acute care services may be insufficient to financing long-term maintenance and lowered recidivism rates. Use of specialty mental healthcare is strongly influenced by non-clinical factors such as race, insurance coverage, and level of education.

As a reaction to shifts in care and managed care guidelines, the government passed legislation in 1996 as a first step in addressing mental health care restrictions. Many mental health advocates took note at the decreasing amount of insurers providing equal mental health benefits to medical benefits. Those who suffered persistent and chronic mental illness were often left without adequate coverage under managed care plans and, as a result, had been left without appropriate treatment and may have been led to state Medicaid programs or state and county programs. The 1996 MHPA was passed in an attempt to ensure that individuals under private managed care had access to behavioral health treatment and that it was given the same regard that medical services were given.

**Limitations of MHPA**

Although the MHPA was an important first step in addressing the inequalities surrounding mental health coverage, it has a number of limitations. In order for the Act to pass, there were a number of compromises and provisions put into place that minimized a number of the intended effects. Insurance companies were able to circumvent a number of the provisions by imposing caps on the number of inpatient days and outpatient visits covered and by increasing co-payments and deductibles. As a result, insurance companies imposed different benefit limits or co-payments for mental health than for general medical services. Many companies were able to exchange inpatient and outpatient mental health dollar limits for visits or day stay limits.
Furthermore, the provisions prevent large numbers of individuals from benefiting from the Act. The eligibility is limited to those employed by large companies and the law does not require insurance companies to provide mental health coverage if they previously had not. Large companies were also given the option to not offer mental health services at all. A second drawback is the exemption granted to large employers who had at least a 1% increase in costs as a result of the provision. Those employers that could prove that their overall costs were increased by more than 1% were exempt from having to offer the acts provisions in the following year.

**Potential Impact of MHPA**

Despite its limitations, the potential impact of MHPA on mental health treatment is far reaching. It is groundbreaking in that the government has begun to recognize the inequalities when it comes to mental health services and it begins to legitimize those suffering from a mental illness. In 1993, the National Advisory Mental Health Council (NAMHC) estimated that the annual savings from mental health parity would be $1.2 billion in general health care costs and $7.5 billion in indirect costs, while the implementation would only cost $6.5 billion (Greenberg, Stiglin, Finkelstein, & Berndt, 1993). The estimates were due to multiple factors including decreased overall utilization of health care services, decreased absenteeism, and higher productivity.

Results of the Act will most likely show mixed results with coverage being better for some and worse for others. Employers will have a number of mechanisms to reduce costs and those who are unable to reduce costs may become exempt. The most significant is that annual and lifetime dollars will be increased thus extending coverage. This will be most significant for those suffering from serious and persistent mental illness. On the other hand, those health plans that choose to drop mental health coverage altogether will reduce access to behavioral health services for many and may force them into government health plans such as Medicaid or Medicare programs.

The effects on providers will in most likelihood have an impact on their course of treatment. Treatment plans may change due to: (1) a client’s coverage being substantially increased and then decreased, (2) coverage may increase and stay increased, or (3) coverage may be decreased immediately. Those insured under these provisions may also have to keep
in mind higher co-payments and deductibles which may, in turn, affect their treatment options.

**Possible Outcomes of MHPA in Relation to ECT**

The MHPA may have a significant impact on individuals receiving ECT in a number of ways. ECT is usually considered when medications fail, cannot be tolerated, or may be dangerous or may be considered for those patients who are severely depressed and are need of a rapid response. In general, it is reserved for those patients who have chronic, persistent, and severe depression. This population may be more inclined to be affected by the parity laws since it is primarily these patients who will need higher annual and lifetime dollars for mental health care. Second, ECT’s average course of treatment is between six to twelve treatments and may be as high as twenty. Depending on payer category, ECT is primarily done in an inpatient setting. Medicaid requires that ECT be performed on a strictly inpatient setting, while Medicare and many private insurers only require the first six to be performed on an inpatient setting with the option to perform the rest on an outpatient basis. This may become significant with the implementation of the parity laws since many insurers may limit number of inpatient and outpatient days within the new parity laws. There may be a shift from ECT being performed on an inpatient setting to an outpatient setting in those insured under managed care companies affected by the parity law.

There may also be a number of disparities among races as a result of the MHPA. A study done by Breakey and Dunn (2004) suggested that Caucasians were more likely to be given ECT than African Americans. They concluded that one of the reasons for the disparity is that ECT is more likely to be offered to affluent patients as a result of insurance coverage and their ability to pay for services (Breakey & Dunn, 2004). The demographics of those receiving ECT may have significant changes as a result of the MHPA. Those with private insurance may now have the opportunity and access to expensive mental health care including ECT treatment.

Length of stay for those receiving ECT may also be affected by the Act in that inpatient days may increase or decrease as a result of insurers cost shifting and limiting number of visits. For example, an insurer may limit the number of inpatient days annually,
but may allow for outpatient ECT maintenance with the increase in annual dollars, thus resulting in a greater number of patients receiving such treatment.

**PURPOSE OF STUDY**

According to Shepard (1987), the effects of modern health care funding sources on quality of mental health services demonstrates a need for further study on the relationship between funding sources and mental health services. It is also important to address the changing laws that may have an effect on those insured, the distribution of those in different payer categories and their resulting treatments. A good indicator and starting point is to examine utilization and length of stay differences according to payer categories (Shepard, 1987). It is also important to study the changing dynamics as a result of the MHPA on treatment course and payer demographics. This study aims to identify the disparity of treatment modalities between government funded insurance groups (Medicare and Medicaid) and private funding sources on the utilization of ECT. Another important dynamic is the impact that the MHPA has had on those who have serious and persistent mental illness. Ultimately this may shed light on modern health care funding systems and their effects on the type of care utilized as well as the quality of care given to mental health patients.

**IMPLICATIONS FOR SOCIAL WORK AND PUBLIC HEALTH**

There have been tremendous changes in mental health services over the past 20 years with newly managed behavioral health plans and legislation aimed at increasing mental health benefits. It is imperative from both a social perspective and a public health perspective to identify influencing factors in a hope to promote the best treatment modalities in the most cost efficient way. Social workers play a vital role in advocating for the mentally ill and promoting services and stability for this population. Standardized practices of care and equality of care continue to be of focus for both social work and public health care workers. The outcomes of studies focusing on how care is delivered will give a foundation and platform for advocacy, policy and reform.

**LENGTH OF STAY AS AN INDICATOR**

Length of stay may be used when all other factors are held equal to identify how payer type affects health care costs and the overall quality of care. How payer type influences
the length of stay in patients receiving ECT may yield valuable information about how care is delegated and differentiated for various payer types. This study seeks to assess whether such funding sources have an effect on overall patient lengths of stay for those receiving ECT.
CHAPTER 2

LITERATURE REVIEW

The following literature review focuses on several aspects of electroconvulsive therapy (ECT) in relation to the history of use, characteristics of patients, diagnosis, economic trends, utilization, payment type, state regulations, length of stay and effectiveness of treatment. The literature also reflects the MHPA legislation and how it may effect mental health treatment, and specifically ECT treatment. Review of the literature included California state statistics, ethnicity dynamics, geographic differences and countervailing trends in its usage and perceived effectiveness.

The available research literature on ECT is limited with much of it being outdated. The difficulty lies in the lack of federal guidelines that require accurate reporting. Currently California Colorado, Texas and Massachusetts are the only states that require data collection for ECT, so it is difficult to identify just how much ECT is administered nationwide. The literature reviewed includes statistics and information from the California Office of Statewide Planning and Development (OSHPD), as well as peer reviewed journals, and government publications.

ECT BACKGROUND

Electroconvulsive therapy was introduced in 1938 and has gone through a number of waves of popularity since its induction. In the 1940s and 1950s, ECT was often administered to the most severe patients residing in large mental institutions. Treatment was often used at high doses for long periods of times as a means to manage unruly patients. This contributed too many of the misperceptions of ECT as a cruel means to control unruly behavior. ECT is given in a series of six to twenty treatments depending on the patient’s diagnosis and the severity of the present condition. It may be given up to three times a week and may be administered during a hospital stay or on an outpatient basis.

ECT works by inducing an electrical shock that creates a seizure for a period of thirty seconds for up to one minute. Muscle relaxants are used to decrease the physical
manifestations of seizures upon the body. The procedure is performed in a hospitals operating room and is always performed under general anesthesia. It is believed that the release of neurotransmitters in the brain as a result of such shock will improve a patient’s mood and affect. Side effects of such treatment include amnesia apathy, euphoria, disorientation, confusion, headache, nausea and delirium. Side effects may last hours, days, weeks or indefinitely.

Along with the misperceptions and the introduction of psychopharmacological medications, the use of ECT has waned. Between 1975 and 1986 studies indicated that ECT use was nearly cut in half but began to steady in the 1980s with the number of patients receiving ECT steadying (Thompson et al., 1994). The majority of ECT is now being administered in behavioral health wards and private psychiatric facilities throughout the United States. ECT is primarily used to treat depression and schizophrenia with a small percentage used to treat anorexia nervosa, toxic dementia, and intractable pain (Kirk & Einbinder, 1994). Current trends have been difficult to identify due to a lack of data. Currently only a handful of states require reporting. It is unclear just how much ECT is being performed today because there are currently no federal guidelines regarding the reporting of ECT.

Although ECT has existed for over fifty years, controversy surrounding its use and effectiveness continues. Many question the complications associated with its use, the setting that it is administered in, its efficacy and the extent of its use.

ECT Studies

Numerous studies have been done evaluating ECT in order to clarify the mechanism of action, the effectiveness, the complications and best practices when administering treatment. A study done by Suzuki and others (2006) displayed effective treatment outcomes for catatonic schizophrenics who received maintenance ECT. When continuing ECT is administered, studies have indicated that the relapse rate is significantly lower than without continuing ECT (Gagne & Furman, 2000). The study showed that with continuing ECT, at two years after treatment, the treatment was 93% effective, and at five years after treatment, 72% still had not relapsed (Gagne & Furman, 2000). ECT can be the best course of treatment for some individuals with severe depression, some psychotic states, and mania. (Rudorfer,
Henry, & Sackeim, 1997). The majority of studies that include depression as the major diagnostic category show that ECT is at least as effective as medication treatment protocols (American Psychiatric Association, 1990). It has been found to be as or more effective than lithium in the treatment of manic episodes and is also a potential treatment for patients experiencing mixed episodes. ECT has been shown to be superior to medication management and behavioral management in the short-term management of severe depression (American Psychiatric Association, 1990). ECT is not effective for chronic schizophrenia. However, ECT has been shown to be effective in patients suffering from an acute onset with intense affective symptoms in those diagnosed with schizophrenia (Sylvester, Mulsant, Chengappa, Sandman, & Haskett, 2000).

A number of previous studies have indicated that ECT has consistently displayed longer lengths of stay with increased hospital admission costs (Thompson et al., 1994). However, a major limitation of previous studies is that the majority of the patient and hospital populations were from urban, teaching hospitals that do not generalize to the broader ECT practice patterns. There has also been a lack of control and adjustment for pretreatment differences in patient demographics and diagnosis prior to ECT in such studies. The population pool of those receiving ECT may have underlying differences from other patients that contribute to the observed longer lengths of stays and associated costs (Thompson et al., 1994).

Electroconvulsive therapy is often utilized as a last resort for patients who have not responded to antidepressant medications and is often not implemented as an initial treatment. Furthermore, state mandates, laws, and the requirement of second and third physician opinion compound the long hospitalizations and associated costs. As a result, it is difficult to assess whether prompt initiation of ECT could increase or decrease inpatient costs for the treatment of major depression. The evaluation of increased or decreased costs associated with ECT has become especially important in light of today’s present managed care thrust and trends toward capitated and prospective payments.

Evaluations of the length and cost of inpatient care for those receiving ECT reveal a tendency for higher inpatient costs (Olfson, Marcus, Sackeim, Thompson & Pincus, 1998). However, the study indicates that the relatively long lengths of stay and costly admissions were related to the patient selection. When controlling for demographics, diagnostic and
hospital organizational characteristics, a prompt initiation of ECT is associated with shorter and less costly hospital stays. The study also indicated that the economically disadvantaged are less likely to receive ECT treatment (Olfson et al., 1998).

**DEMOGRAPHICS**

In analyzing patients receiving ECT treatment, it is important to note that the population selected for treatment tends to be older, has higher rates of hospitalization and general medical co-morbidity and tends to receive care in large urban hospital settings (Yergen, Flood, LoGerfo, & Dierhr, 1987). In adjusting for such demographics, the study by Olfson and others (1998) indicates that when adjusting for such demographics, ECT tends to be highest for older, white, Medicare beneficiaries residing in more affluent demographic areas. Age was the most powerful predictor of ECT use, followed by geographic region. Those receiving Medicaid and self-payment displayed significantly lower treatment rates when controlling for age. In comparison to whites, blacks tended to be less likely to receive such treatment (Olfson et al., 1998).

The Olfson and others (1998) study also controls for demographic, diagnosis, pre-medical conditions and hospital administrative variables in the evaluation of costs and length of stay. However, the limitation of this study is the lack of outcome variables related to clinical outcomes. Quality of life, reduction in symptoms and recidivism rates are not assessed which makes it difficult, in turn, to assess accurate cost-effectiveness of such treatments.

**LENGTH OF STAY**

There have been a number of factors that have been identified as indicators for length of stay in psychiatric wards. These factors include age, gender, physical illness, being single, involuntary commitment, previous admissions, and having poor social functioning (Cohen & Casimir, 1989). A number of studies have identified race as a factor in length of stay (Hu, Snowden, & Jerrell, 1992; Hugh et al., 1987). Hispanics and whites were noted as having an equal likelihood of hospitalization. Hispanics were found to have significantly shorter lengths of stay (Hugh et al., 1987). Another study by Hu and others (1992) found that African Americans had significantly shorter lengths of stay, but utilized day treatment and residential facilities more than white Americans (Hu et al., 1992).
ECT may be administered in both an in-patient and outpatient basis. Both inpatient and outpatient ECT is reported as a “one-day” stay in a hospital setting. Generally, patients receive the series of treatments on an inpatient basis and the follow-up series on an outpatient basis for up to fifteen treatments in one year. Lengths of stay can vary anywhere from one day to several weeks, depending on the court litigation, necessity for physician verification, and payment type. The period considered to be the optimal length of stay for a patient receiving electroshock therapy can vary dramatically depending upon a number of variables.

**Types of ECT: Legalities**

ECT can be broken down into three categories: (1) voluntary, (2) involuntary with capacity, and (3) involuntary without capacity. In a voluntary ECT protocol, the patient has elected the procedure and signed an informed consent to receive therapy. In an involuntary with capacity case, the patient’s care and treatment has been appointed to a conservator, with the patient still having the capacity to sign an informed consent. A patient who is involuntary without capacity is one whose care is also under the care of a conservator but who does not have the capacity to sign consent to treat. Those patients who are identified as involuntary will have longer lengths of stay due to the court proceedings, the necessity to obtain the evaluation of two other physicians, and the need to gain approval by the patient’s conservator or attorney, all of which may take weeks to complete.

**Costs**

Currently the ECT treatment may cost between $800 and $1,000 per treatment (Berger, 2005). These costs include psychiatrist, anesthesiologist and various hospital charges. Berger (2005) states that the expensive treatment may actually be more cost effective when treatment results in shorter lengths of stay in an inpatient hospital setting.

In 1995, the mean total costs of inpatient hospitalization for those receiving ECT within the first five days of a hospital admission were shown to be $5,000 greater than for depressed patients who did not receive ECT treatment (Olfson et al., 1998). However, after controlling for demographics, diagnostics and hospital administration trends, the prompt provision of ECT was shown to be associated with shorter and less expensive lengths of stay. The study indicates a six day reduction in stay and a decrease of $5,722 in hospital costs (Olfson et al., 1998).
Pre-approval mandates that require certification for ECT treatment limit the number of ECT treatments a patient may receive and impede the prompt initiation that reduces hospital costs and average lengths of stays for such patients (Fink, 1998). Fink argues that such mandates and guidelines that promote medication management and reductions in the number of maintenance ECT treatments are disadvantageous to patients receiving ECT and impede successful outcomes.

**Payer Guidelines**

Insurance companies have different guidelines and certifications for ECT treatment (Fink, 1998). Some insure inpatient treatment only, some require a one-night minimum stay inpatient, and some allow extra payment for a second treatment in the same session. The requirements of medication algorithms for those receiving ECT treatment also vary greatly among providers. Many managed care providers require two to three failed medication regimens prior to ECT approval, while many others still do not recognize ECT as an approved treatment for those patients with schizophrenia, or bi-polar disease, or for adolescents. Some providers will only approve treatment when suicidal preoccupations are documented and initial medication regimens have failed (Fink, 1998). Authorizations that do not impede ECT initiation may promote psychiatrist practice which may ultimately prove to lower hospital costs and lengths of stay for such patients. Fink also points out that ECT treatment has been traditionally unbundled, paying the anesthesiologist two to six times higher than the treating psychiatrist. The unbundling of services, along with incentives for outpatient ECT, has made it uneconomical for many psychiatrists to administer ECT. Fink advocates for the bundling of treatment costs to assure adequate allowances to the entire treatment team and for the provision of similar reimbursements for inpatient and outpatient ECT (Fink, 1998).

The efficacy of continuation ECT has proven to be more effective than antidepressant medication management alone, according to a study conducted by Gagne, Furman, Martin, Carpenter, and Price (2000). The study indicates that the rate of surviving without relapse within a two-year period was 93% for those receiving continuation ECT and 52% for those patients receiving antidepressants alone. The findings suggest that continuation ECT may be
more effective than medication management alone and may prove to be more cost-effective in the long run for those patients suffering from chronic depression (Gagne et al., 2000).

**TRENDS**

While insurance companies and Medi-Cal/Medicare programs are reluctant to pay for other psychiatric services, they almost always continue to cover electroshock therapy costs without serious question. Insurance companies pay the costs in over 70% of ECT cases (American Psychiatric Association, 1990). The cost of ECT runs upwards from $35,000 per series. Patients generally receive 6 treatments during an inpatient stay at a hospital and get up to seven follow up ECTs on an outpatient basis. Generally patients may receive up to thirty treatments in a year. ECT treatments cost $800-$1000 per treatment plus hospital stay ($600-800 per day) which is generally a series of 8-12 and 25-30 days in a hospital. This does not include the costs for ECT specialists, two other consulting psychiatrists, anesthesiologist’s fee, treatment room fee, pre-medications, post medications and support staff. The attending psychiatrist may charge $300 and up for a session of ECT and may easily perform five to six ECT treatments within one hour ($1,800/hour). The average salary for psychiatrists practicing ECT may be twice that of other psychiatrists. ECT appears to be an important moneymaker for both hospital and psychiatrists in a time when costs are high and reimbursements are scarce. It is estimated at being a $2-3 billion dollar a year industry (Frank & Manning, 1992).

The implementation of parity laws may have a dramatic effect on those patients under managed care companies that fall under the provisions of MHPA. The high cost of ECT treatment may have left many without ability to be covered by their plan. Increasing annual and lifetime dollars may have a dramatic effect on those in this payer category. It may also have an effect on ECT’s distribution in inpatient versus outpatient treatments. The law allows the insurers to shift costs by limiting inpatient days and number of outpatient visits. This may have a dramatic effect on the distribution of ECT treatment in this payer category.

**MHPA LIMITATIONS**

Although the MHPA was an important first step in addressing the inequalities surrounding mental health coverage it has a number of limitations. In order for the Act to pass, there were a number of compromises and provisions put into place that minimized a
number of the intended effects. Insurance companies were able to circumvent a number of the provisions by imposing caps on the number of inpatient days and outpatient visits covered and by increasing co-payments and deductibles. As a result, insurance companies imposed different benefit limits or co-payments for mental health than for general medical services. Many companies were able to exchange inpatient and outpatient mental health dollar limits for visits or day stay limits (Murray & Henriques, 2004).

Furthermore, the provisions prevent large numbers of individuals from benefiting from the Act. The eligibility is limited to those employed by large companies and the law does not require insurance companies to provide mental health coverage if they previously had not. A second drawback is the exemption granted to large employers who had at least a 1% increase in costs as a result of the provision (Sturm & McCulloch, 1998).

**MHPA Potential Impact**

Despite its limitations, the potential impact of MHPA on mental health treatment is far reaching. It is groundbreaking in that the government has begun to recognize the inequalities when it comes to mental health services and it begins to legitimize those suffering from a mental illness. In 1993, the National Advisory Mental Health Council (NAMHC) estimated that the annual savings from mental health parity would be $1.2 billion in general health care costs and $7.5 billion in indirect costs, while the implementation would only cost $6.5 billion (Greenberg et al., 1993). The estimates were due to multiple factors including decreased overall utilization of health care services, decreased absenteeism, and higher productivity.

Results of the Act will most likely show mixed results with coverage being better for some and worse for others. Employers will have a number of mechanisms to reduce costs and those who are unable to reduce costs may become exempt. The most significant is that annual and lifetime dollars will be increased, thus extending coverage. This will be most significant for those suffering from serious and persistent mental illness. On the other hand, those health plans that choose to drop mental health coverage altogether will reduce access to behavioral health services for many and may force them into government health plans such as Medicaid or Medicare programs.
The effects on providers will in most likelihood have an impact on their chosen courses of treatment. Treatment plans: (1) may change due to either a clients coverage being substantially increased and then decreased, (2) may increase and stay increased, or (3) may be decreased immediately. Those insured under these provisions may also have to keep in mind higher co-payments and deductibles which may, in turn, affect their treatment options.

**MHPA Possible Outcomes in Relation to ECT**

The MHPA may have a significant impact on individuals receiving ECT in a number of ways. ECT is usually considered when medications fail, cannot be tolerated, or may be dangerous or may be considered for those patients who are severely depressed and are need of a rapid response. In general, it is reserved for those patients who have chronic, persistent, and severe depression. This population may be more inclined to be affected by the parity laws since it is primarily these patients who will need higher annual and lifetime dollars for mental health care. Second, ECTs average course of treatment is between six to twelve treatments and may be as high as twenty. Depending on payer category, ECT is primarily done in an inpatient setting. Medicaid requires that ECT be performed on a strictly inpatient setting, while Medicare and many private insurers only require the first six to be performed on an inpatient setting with the option to perform the rest on an outpatient basis. This may become significant with the implementation of the parity laws since many insurers may limit number of inpatient and outpatient days with the new parity laws.

There may also be a number of disparities among the races as a result of the new parity laws. A 2004 study by Breakey and Dunn suggested that Caucasians were more likely to be given ECT than African Americans. They concluded that one of the reasons for the disparity is that ECT is more likely to be offered to affluent patients as a result of insurance coverage and their ability to pay for services (Breakey & Dunn, 2004). The demographics of those receiving ECT may hold notable changes as a result of the MHPA. Those with private insurance may now have the opportunity and access to expensive mental health care including ECT treatment. Length of stay for those receiving ECT may also be affected by the Act in that inpatient days may increase or decrease as a result of insurers cost shifting and limiting number of visits. For example, an insurer may limit the number of inpatient days
annually, but may allow for outpatient ECT maintenance with the increase in annual dollars, thus resulting in a greater number of patients receiving such treatment.

**Method of Payment**

There is currently a wide disparity among financial responsibility within the mental health care system (Hogan, 1998). Increased cost of care has forced services that were previously handled by self-pay or state operated facilities to a third party payer system. Federal insurance programs include Medicare and Medicaid. Medicare is a federally funded system of health and hospital insurance for persons aged 65 and older and for disabled persons. Medicaid is a federal and state program providing insurance for the eligibly poor. Other methods of payment include CHAMPUS, for military personnel and private insurance carriers. The private insurance carriers that are provided through employers with over fifty employees are those that will be affected by the MHPA. There is also a small portion that is state funded or provided through county hospitals for those that are not enrolled in a Medicaid program.

As mental health care became increasingly more expensive, the mechanisms of management changed and providers evolved into managed behavioral health organizations (MBHOs) (Mihalik & Scherer, 1998). Mihalik and Scherer state: "Evolution of MBHOs can be seen as a progression toward increasing variation in and fragmentation of once distinct organizational types" (1998, p. 1).

The variations among payers have led to increasing numbers of variables that led to variations in types of utilization and delivery systems (Mihalik & Scherer, 1998). Not only are the different payers having an effect on the utilization of mental health services, but by maintaining separate systems, the stigma associated with mental illness has exacerbated. By considering the many different types of payer categories and their correlation or effect on the type of care received it is possible to consider the implications of public and private integration on care.

As a result, those who are suffering from a serious mental illness or in need of specialized treatment such as ECT would not receive such treatments unless enrolled in a particular government program such as Medicare or Medi-Cal or a private HMO or PPO. The modification of utilization by managed care systems today creates a dramatic shift in those
who receives such treatment and the type of mental health services given to such patients. Certain benefits and treatment methods may be excluded or severely limited by certain benefit packages. The result is a shift in cost, quality and utilization of care. The MHPA was enacted to combat the limitations that arose in MBHOs. It was a response to the limited services and caps that MBHOs had created and was intended to provide equality for behavioral health services and medical treatment.

**DIFFERENCES IN EXPECTED PRINCIPLE SOURCE OF PAYMENT**

The principle source of payment has a major impact on the type of care received, length of stay, and treatment outcomes (Aday & Shortell, 1988; Bursten, Lipsitz, & Brennan, 1992; Greenberg, Chute, & Stukel, 1988; Rhee et al., 1997; Weissman & Epstein, 1989). In a 2000 study by McAlpine and Mechanic, it was found that people with severe mental illness have a high level of economic and social disadvantage. McAlpine and Mechanic state:

In a 12-month period almost three-fifths of persons with severe mental illness did not receive specialty mental health care. One in five persons with severe mental illness are uninsured, and Medicare or Medicaid insures 37 percent. Persons covered by these public programs are over six times more likely to have access to specialty care than the uninsured are. Problems of adequate care for the severely mentally ill may be exacerbated by the managed care trend to reductions in intensity of treatment (2000, p. 277).

Indigent care, including patients of lower socioeconomic status, generally have access to and utilize government funded programs such as Medicare and Medi-Cal. Socioeconomic status and payer type have been found to have significant effects on type of care and intensity of care (Rhee et al., 1997). This study showed that patients with Medicaid or with no insurance had decreased hospital resource utilization, along with a decreased length of stay. Rhee and others (1997) note that the findings display a gap in appropriate medical care for the uninsured and underinsured. While patients with lower socioeconomic status tend to require more health care resources, they are receiving less health care and shorter lengths of stay. This indicates that the patient’s ability to pay may have more bearing on treatment than the patient’s true medical necessity. A study by Weissman and Epstein (1989) found that a shorter hospital length of stay and a fewer number of procedures for elective and chronic illnesses were associated with uninsured patients.
A conflicting study found that those with lower socioeconomic status have been shown to have longer hospital lengths of stay and higher hospital charges overall (Epstein, Stern, & Tognetti, 1988). The study notes that the longer length of stay may be due to a delay in access to services among this group of patients, which may result in those who are sicker upon admission, thus requiring longer hospitalizations (Epstein et al., 1988). The difference in study outcomes may be a result of types of medical care and regional differences among study participants.

**DIFFERENCES IN DIAGNOSIS AMONG ETHNIC AND RACIAL GROUPS**

Differences have also been identified among ethnic groups, with the majority of indigent government funded programs being comprised of minorities (Julia, 1996). A study done by Philbin and DiSalvo (1998) noted that African-American patients were found to have higher prevalence of Medicare insurance than similar white patients. Worsened care processed and inequality of services was found among African-American versus white patients (Philbin & DiSalvo, 1998; Weissman & Epstein, 1989).

A study by Strakowski and others (1994) observed racial differences among diagnosis. The study notes that differences in psychiatric diagnosis, as well as the distribution of mental health services were found to be significantly different among various ethnicities. African-Americans were more likely than white counterparts to receive a diagnosis of schizophrenia and less likely to receive a diagnosis for a personality disorder. The study notes that African-Americans are significantly misdiagnosed with schizophrenia, which has a significant impact on outcomes and care received (Strakowski et al., 1994). The impact of such findings correlates with payer mix statistics, treatment and patient outcomes. If minorities such as African-Americans and Hispanics are admitted to treatment facilities with less severe Diagnostic Related Groups (DRGs), there may be significant impacts on outcomes. A less severe DRG would result in a shorter length of stay, higher rates of recidivism and altered medical and mental health treatment. This would also hinder the use for ECT in such patients since ECT is usually indicated for those who have exhausted other treatment modalities or who have a more severe DRG. A study by Hermann and others (1999) observed that ECT treatment has not been discriminately utilized in mental health treatments, meaning that the treatment was done in conjunction with other treatments, such
as medication and therapy. The study does note a disparity in diagnosis of patients associated with the era in which the physician was trained. Those psychiatrists who trained in earlier decades were less likely to use the DSM-III than psychiatrists of later decades. Psychiatrists with increased knowledge of the DSM, knowledge of ECT indications and of diagnostic practices were less likely to be discriminatory in ECT utilization (Herman et al., 1999).

**Rates of Utilization**

Significant studies have shown a number of differences among patients who utilize mental health services and receive ECT treatment (Bennet, 1992; Sylvester et al., 2000). The RAND study indicated that HMO enrollees were less likely to receive mental health treatment in a year, but 50% more likely to utilize mental health services over several years than traditional fee-for-service patients (Kahn, Draper, Keeler, & Emmett, 1991).

Sylvester and colleagues (2000) note that the majority of patients who received ECT were women (71%) and were diagnosed with a mood disorder. Given that there is a higher rate of depression among women, the higher prevalence of women diagnosed with major depressive disorder is to be expected (Grosser, Pearsall, & Fisher, 1975; Mills, Pearsall, Yesavage, & Salzman, 1975; Sylvester et al., 2000). Middle and upper class socioeconomic levels were disproportionately represented among ECT patients (Kramer, 1985). A study by Hermann and others (1995) also indicated a trend in middle and upper socioeconomic groups. These studies contrasts with earlier findings in which lower socio-economic status was more likely to receive ECT treatment (Robinson, Redlich, & Meyers, 1954).

National and state studies have found large disparities in the use of ECT due to state regulations (Fink, 1979; Thompson et al., 1994; Winslade, Liston, Ross, & Weber, 1984). Studies indicate that far more ECT is performed in private rather than publicly funded hospitals. Reasons for this include discrepancies in state regulations, differences in financial reimbursement and differences in diagnoses between public and private hospitals (Thompson et al., 1994).

There are several limitations when identifying and analyzing rates of utilization. Many of the studies were taken from physician surveys and not from state statistical data. Clinical and demographic data is either limited or not available. Currently only four states are required to report ECT data making it difficult to adequately assess the rates of utilization.
Another barrier to identifying utilization is the large disparity among diagnosis and the lack of clear diagnostic guidelines for ECT treatment. The emergence of standard diagnostic criteria for major mental illnesses has improved the reliability of diagnosis and treatment recommendations. However there is still a large disparity among psychiatrists. Hermann and others state:

Survey data for ECT suggest that the use of DSM-II-R criteria for diagnosis varies, with less adherence among psychiatrists trained earlier.

The DSM-II-R is the Diagnostic and Statistical Manual of Mental Disorders and is published by the American Psychiatric Association and provides a standard of criteria for the classification of mental disorders. It is used in the United States by clinicians, researchers, psychiatric drug regulation agencies, health insurance companies, pharmaceutical companies and policy makers (American Psychiatric Association [DSM-IV-TR], 2000) (as cited in Hermann et al., 1999, p. 1060).

Since the 1950s there has been a very limited amount of research and data. Due to the lack of adequate data there continues to be much debate surrounding the utilization of ECT. As the U.S. Agency for Healthcare Research and Quality (AHRQ, previously known as the Agency for Health Care Policy and Research) and several other medical specialty societies begin to improve the tracking and data surrounding ECT, there will ultimately be a more effective way to evaluate its use, outcomes, and cost effectiveness. This, coupled with major legislation such as the passing of the MHPA, will ultimately bring more awareness to the treatment of those suffering from mental illness, improve treatment standards, and improve access for those who previously were unable to receive expensive therapies like ECT.
CHAPTER 3

METHODOLOGY

This is a retrospective, descriptive study involving data aggregation and analysis from the California Office of Statewide Health Planning and Development (OSHPD) patient discharge data. One of the advantages of utilizing existing data is that it less costly and time consuming to use than developing and collecting original data (Rubin & Babbie, 2001). Disadvantages include the validity of such data. The data gathered by OSHPD are aggregated patient discharges that were not gathered specifically for the research questions being investigated.

The analysis of this data was used for the purpose of seeing whether the impact of the MHPA had a significant effect on electroconvulsive therapy. Demographics such as sex, race, ethnicity, length of stay and DRGs were analyzed in order to note any significant changes in populations receiving ECT. Electroconvulsive therapy is a treatment for severe mental illness in which electrical stimuli are utilized to produce a generalized seizure. The following sections outline the population selected, the data collection instrument utilized, and the analysis used to address the proposed research question.

DATA SOURCES

Data was obtained from the patient discharge records of the OSHP in California for the years 1996 and 2000. The State of California mandates that California hospitals report patient discharge data semi-annually. For every patient discharged from a California hospital, data reported includes: patient demographic information, such as age, sex, county of residence, and race/ethnicity; diagnostic information, such as International Statistical Classification of Diseases and Related Health Problems (ICD-9-CM) diagnostic codes, diagnostic related groups (DRGs) & major diagnostic categories (MDC) groupings; treatment information, such as ICD-9-CM procedure codes; eternal cause of injury codes (E-codes); and total charges with expected principal source of payment.
The data was downloaded from the OSHPD data for the years 1996 and 2000 in order to assess the impact of funding sources on patients receiving electroconvulsive therapy. Abstracted data includes; patient demographics (age, race, and gender), hospital county, diagnostic codes as identified by the Diagnosis Related Groupings (DRGs), procedural codes as identified by the ICD-9 procedural manual (International Classification of Diseases, ninth edition), lengths of stay and payment source. The OSHPD website was utilized for data support and information related to patient discharges.

**INSTRUMENT**

The data collection instrument utilized was the California Hospital Discharge Data System (CHDDS) that was aggregated by the California Office of Statewide Health Planning and Development (OSHPD). Data includes records for each patient discharged from all California acute care hospitals during the years of 1996 and 2000. The data were filtered utilizing SPSS software in order to identify specific demographic trends and ECT utilization according to payer category.

**SUBJECTS**

The subjects analyzed in the study included those patients receiving ECT who were receiving treatment in California during the years of 1996 and 2000. Discharge data included all patients in California that were assigned a DRG for mental illness, including depression, schizophrenia, schizoaffective and all induced organic disorders. Those included in this investigation were patients receiving the procedure of electroshock therapy (ICD-9 code 94.27) as classified in the Physicians’ Current Procedural Terminology classifications. Patients older than 100 years of age were omitted due to the assumption that such patients would likely have comorbidity and medical complications that would restrict ECT use.

**PRINCIPAL DIAGNOSIS AND PRINCIPAL PROCEDURE**

The principal diagnosis is the condition established to be the chief cause of the admission of the patient to the care facility. Along with the ICD-9 codes, the principal diagnosis identified for those receiving ECT treatment for the years 1996 and 2000 are identified in Table 1. The definitions taken from the ICD-9. The first 4 numbers are the major diagnosis. The fifth number is the severity of diagnosis (CDC, 2010).
Table 1. Definition of Principal Diagnosis Associated with ECT

<table>
<thead>
<tr>
<th>DRG</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>290</td>
<td>Dementias</td>
</tr>
<tr>
<td>290.0</td>
<td>Senile dementia, uncomplicated</td>
</tr>
<tr>
<td>290.2</td>
<td>Senile dementia with delusional or depressive features</td>
</tr>
<tr>
<td>290.4</td>
<td>Vascular dementia</td>
</tr>
<tr>
<td>293</td>
<td>Transient organic psychotic conditions</td>
</tr>
<tr>
<td>293.0</td>
<td>Delirium, conditions classified elsewhere</td>
</tr>
<tr>
<td>295</td>
<td>Schizophrenic disorders</td>
</tr>
<tr>
<td>296</td>
<td>Episodic mood disorders</td>
</tr>
<tr>
<td>296.2</td>
<td>Major depression, single episode</td>
</tr>
<tr>
<td>296.3</td>
<td>Major depression, recurrent episode</td>
</tr>
<tr>
<td>296.4</td>
<td>Bipolar affective disorder, manic</td>
</tr>
<tr>
<td>296.5</td>
<td>Bipolar affective disorder, depressed</td>
</tr>
<tr>
<td>296.6</td>
<td>Bipolar affective disorder, mixed</td>
</tr>
<tr>
<td>296.7</td>
<td>Bipolar disorder, unspecified</td>
</tr>
<tr>
<td>296.8</td>
<td>Manic-depressive psychosis, other and unspecified</td>
</tr>
<tr>
<td>296.9</td>
<td>Other and unspecified affective psychoses</td>
</tr>
<tr>
<td>297</td>
<td>Paranoid states</td>
</tr>
<tr>
<td>298</td>
<td>Other nonorganic psychoses</td>
</tr>
<tr>
<td>300</td>
<td>Neurotic disorders</td>
</tr>
<tr>
<td>300.0</td>
<td>Anxiety state, unspecified</td>
</tr>
<tr>
<td>300.01</td>
<td>Panic disorder, no agoraphobia</td>
</tr>
<tr>
<td>300.02</td>
<td>Generalized anxiety disorder</td>
</tr>
<tr>
<td>300.3</td>
<td>Obsessive-compulsive disorder</td>
</tr>
<tr>
<td>300.4</td>
<td>Dysthymic disorder</td>
</tr>
<tr>
<td>301</td>
<td>Personality disorders</td>
</tr>
<tr>
<td>301.8</td>
<td>Other personality disorders</td>
</tr>
<tr>
<td>301.83</td>
<td>Borderline personality disorder</td>
</tr>
<tr>
<td>303.9</td>
<td>Other and unspecified alcohol dependence</td>
</tr>
<tr>
<td>307</td>
<td>Special symptoms or syndromes, not elsewhere classified</td>
</tr>
<tr>
<td>307.1</td>
<td>Anorexia nervosa</td>
</tr>
<tr>
<td>307.5</td>
<td>Other and unspecified disorders of eating</td>
</tr>
<tr>
<td>309</td>
<td>Adjustment reaction</td>
</tr>
<tr>
<td>309.8</td>
<td>Other specified adjustment reactions</td>
</tr>
<tr>
<td>310</td>
<td>Specific nonpsychotic mental disorders following organic brain damage</td>
</tr>
<tr>
<td>311</td>
<td>Depressive disorder, not elsewhere classified</td>
</tr>
<tr>
<td>333.92</td>
<td>Neuroleptic malignant syndrome</td>
</tr>
<tr>
<td>427.31</td>
<td>Atrial fibrillation</td>
</tr>
<tr>
<td>427.89</td>
<td>Atrioventricular nodal</td>
</tr>
<tr>
<td>428.0</td>
<td>Congestive heart failure unspecified</td>
</tr>
<tr>
<td>453.8</td>
<td>Acute venous embolism and thrombosis of other specified veins</td>
</tr>
<tr>
<td>493.21</td>
<td>Chronic obstructive asthma with status asthmaticus</td>
</tr>
<tr>
<td>518.4</td>
<td>Acute edema of lung unspecified</td>
</tr>
<tr>
<td>648.44</td>
<td>Postpartum mental disorders of mother</td>
</tr>
<tr>
<td>969.0</td>
<td>Poisoning by antidepressants</td>
</tr>
<tr>
<td>969.1</td>
<td>Poisoning by phenothiazine-based tranquilizers</td>
</tr>
<tr>
<td>969.4</td>
<td>Poisoning by benzodiazepine-based tranquilizers</td>
</tr>
<tr>
<td>977.8</td>
<td>Poisoning by other specified drugs and medicinal substances</td>
</tr>
<tr>
<td>V57.89</td>
<td>Care involving other specified rehabilitation procedure</td>
</tr>
</tbody>
</table>
The principal procedure is the one which was performed for definitive treatment, it is the procedure most related to the problem. The appropriate codes used in the OSHPD system are specified in the International Classification of Diseases, 9th Revision, Clinical Modification, U.S. Department of Health and Human Services, Washington D.C. (ICD-9-CM). The ICD-9 procedure code used to filter out the patients receiving ECT in California is 92.47.

**TIMEFRAME OF STUDY**

The years 1996 and 2000 were chosen in order to identify what impact the MHPA had on treatment and demographics. The MHPA was signed into law in 1997 and was applied to managed health care plans in 1998. The year 2000 was chosen in order to identify any impacts that the law may have had on those receiving ECT treatment.

**VARIABLES**

The dependent variable in this study is the number of electroconvulsive treatments given in an acute hospital setting. The independent variables include the expected principal source of payment (payer category), the principal diagnosis, patient age, race, and ethnicity (see Table 2). Expected principal source of payment is defined as the identified source expected to pay the greatest portion of the patient’s bill. Identified sources include those payers listed in the OSHPD hospital discharge data reporting manual as “expected principal source of payment.” In the 1996 data set, HMOs, and PPOs are listed in separate categories. Payer categories are described in the next section.

**Table 2. Definitions of Independent and Dependent Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Age of patient at time of discharge in years</td>
</tr>
<tr>
<td>Sex</td>
<td>Sex of patient</td>
</tr>
<tr>
<td>Race</td>
<td>Patient’s racial background</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Patient’s ethnicity as Hispanic, Non-Hispanic or Other</td>
</tr>
<tr>
<td>County</td>
<td>Identified hospital county zip codes</td>
</tr>
<tr>
<td>Principal Diagnosis</td>
<td>The condition established as the chief cause of admission into the acute care facility</td>
</tr>
<tr>
<td>Principal Procedure</td>
<td>The principal classification of the chief procedure as defined in the ICD-9 manual</td>
</tr>
<tr>
<td>Expected Payer Category</td>
<td>The expected source of payment by acute care facility for patient’s care</td>
</tr>
</tbody>
</table>

*Note.* The definitions were taken from the OSHPD 2000 Discharge Data Documentation, Public Versions A and B.
PAYER TYPE

The OSHPD data source aggregates the payer type into categories and is listed in the data archive as “expected principal source of payment.” Payer categories include: Medicare, Medi-Cal, Private Coverage, Worker’s Compensation, County Indigent Programs, Other Government, Other Indigent, Self Pay, and Other Payer (see Table 3).

Table 3. Expected Principal Source of Payment

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare</td>
<td>Defined in the Title XVIII and Title I of the Federal Medicare Act.</td>
</tr>
<tr>
<td>Medi-Cal</td>
<td>Defined in the Title XIX of the Federal Medicare Act.</td>
</tr>
<tr>
<td>Private Coverage</td>
<td>Payment covered by private, non-profit, or commercial health plans, whether insurance or other coverage, or organizations. Included are payments by local or organized charities, such as the Cerebral Palsy Foundation, Easter Seals, March of Dimes, or Shriners.</td>
</tr>
<tr>
<td>Worker’s Compensation</td>
<td>Payment by Worker’s Compensation Insurance.</td>
</tr>
<tr>
<td>County Indigent Programs</td>
<td>Patients covered under Welfare and Institutions Code Section 17000 includes programs funded in whole or in part by County Medical Services Program (CMSP), California Healthcare for Indigents Program (CHIP), and/or other Realignment Funds whether or not a bill is rendered.</td>
</tr>
<tr>
<td>Other Government</td>
<td>Any form of payment by a government agency, including local, state or federal with the exception of Medicare and Medi-Cal or Title V (Maternal and Child Health). Includes funds received through California Children Services (CCS), the Civilian Health and Medical Program of the Uniformed Services (TRICARE), and the Veterans Administration.</td>
</tr>
<tr>
<td>Other Indigent</td>
<td>Patients receiving care pursuant to Hill-Burton obligations or who meet the standards for charity care pursuant to the hospital’s established charity care policy.</td>
</tr>
<tr>
<td>Self Pay</td>
<td>Payment received directly from the patient, relatives or friends.</td>
</tr>
<tr>
<td>Other Payer</td>
<td>Any third party payment not included in the above categories. Included are cases where no payment will be required by the facility, such as special research or courtesy patients.</td>
</tr>
</tbody>
</table>

DEMOGRAPHICS

The data was evaluated for variations associated with age, gender and race, length of stay and payer category. Every patient who received ECT was evaluated in this study. Age ranged from 9 to 98. Age affects ECT treatment in a number of ways. Younger admissions are generally less likely to receive ECT due to conservative treatment practices and ECT side effects. Older patients have often times exhausted other treatment modalities in order to meet ECT protocols and state mandates and are often more susceptible to depression and psychosis, which are criteria necessary to qualify for ECT treatment (Hermann et al., 1995).
Categories of race include White, Black, Native American/Eskimo/Aleut, Asian/Pacific Islander, and a group categorized as Other (any possible options not covered by the previous categories).

**DATA EXTRACTION AND STATISTICAL ANALYSIS**

Data was obtained as a computer text file from the OSHPD information database, then imported to SPSS 18.0 for analysis. Descriptive statistics were computed to describe the study population in terms of ECT and payer source. Statistics such as the mean, standard deviation, and range were explored; t-tests and chi-square tests were utilized to demonstrate how payer source and ECT are related. The 1996 and 2000 data sets were filtered to eliminate all patients that did not receive ECT treatment. Patients were filtered by ICD-9 procedure code 94.27.

**ECT and Hospital Numbers for 1996 and 2000**

The entire data sets for 1996 and 2000 were filtered to identify total mental health patients. This information was compared to the filtered ECT cases to identify the movement in ECT treatments went down in relation to total mental health treatment cases over time. A cross tabulation was performed to identify differences in the number of hospitals performing ECT in 1996 and 2000. An independent sample t-test was utilized to assess ECT treatments while controlling for total mental health admissions.

**Demographics**

Frequencies were analyzed to determine any trends or differences in demographics. Cross tabs were used to determine any correlations between years and demographics, length of stay, payer category, and principal diagnosis between 1996 and 2000. T-tests were used to test for significance in age between years. Chi-square tests were utilized to test significance in frequency categories such as ethnicity and race between 1996 and 2000.

**Length of Stay, Principal Diagnosis, and Payer Categories**

Cross tabulation was run for length of stay and years 1996 and 2000. A chi square test was utilized to test for significance.
The principal diagnoses were analyzed for 1996 and 2000. Frequencies were run by cross tabulation and a chi square test was run to identify any significant differences. The principal diagnoses were collapsed, eliminating diagnoses with less than five cases. All major depression diagnoses were collapsed into one category and all bipolar diagnoses were collapsed into one category. See Table 1 for specific major depression and bipolar classifications.

Frequencies were run for payer category for both 1996 and 2000. A cross tabulation and chi-square test was used to identify any significant differences. Payer categories of Worker’s Compensation, County Indigent Programs, and Other Government were combined for both years due to the small numbers in each category. The “Other Payer” category and Not Reported” category were collapsed due to the small number of cases in each category.

**HYPOTHESES**

Expectations include observed differences in the utilization of ECT based upon payer source. The anticipation is that patients who are funded by Medicare will have a higher number of ECT treatments. The expectation is due to age dynamics associated with treatment as well as Medicare treatment protocols and reimbursement incentives for ECT utilization. It would be expected to see older patients to have more ECT treatments. Other hypotheses include patient profiles that include women, over the age of 64 with a diagnosis of depression, and associated psychotic disorders. This is based upon previous literature findings and the large number of women diagnosed with depression.

Another expectation is that ECT for those under “managed care” and private payer categories will have a higher amount of ECT in 2000 as a result of the MHPA. Higher annual and lifetime limits for mental health in this payer category would allow for more coverage for this population that may provide greater access for costly ECT treatment in this category. This expectation is examined by descriptive statistics utilizing means, modes, and standard deviations for patients receiving ECT.
CHAPTER 4

EMPIRICAL RESULTS

The results of this study include the number of electroconvulsive treatments performed in California for the years 1996 and 2000 including any differences in prevalence by age, race and gender, payer category, and length of stay. Also included are the most utilized diagnoses associated with ECT use and any variations from 1996 and 2000.

ECT NUMBERS FOR 1996 AND 2000

There were 1,742 ECT treatments in 1996 and 643 treatments in 2000, a drop of 63.08%. The total number of mental health admissions was 182,132 for 1996 and 87,092 for 2000, a drop of 52.18%. There was a significant decrease of ECT treatment by 2% when controlling for total mental health admissions. An independent sample t-test yields a $p$-value less than 0.0001, suggesting that there was a significant difference in the amount of ECT performed between 1996 and 2000 when controlling for total mental health cases.

HOSPITALS PERFORMING ECT

A cross tabulation was performed to identify hospitals that may have stopped utilizing ECT. There were a total of 388 hospitals that had patient admissions for mental health treatments for 1996 and 2000. There were 46 hospitals in 1996 that performed ECT at least once that did not perform ECT at all in 2000. There were a total of 13 hospitals that performed ECT in both years. There were two hospitals that performed ECT in 2000 that did not perform it in 1996. The $p$-value for the chi-square test was less than 0.05, revealing that the relationship is statistically significant. There was a significant decrease in hospitals performing ECT from 1996 to 2000.

GENDER

In 1996 patients receiving ECT were 29.7% male and 70.3% female. In 2000 patients were 28.3% male and 71.7% female. The chi-square test indicated that there was no significant difference between years 1996 and 2000 ($p = 0.513$).
**AGE**

The average age of admission for ECT was 57.61 in 1996 and 57.49 in 2000. A t-test was performed, and the $p$-value was 0.887, or statistically insignificant. Thus, there was no difference in age between 1996 and 2000, with the average age being 57.

**RACE**

The percentage of white patients that received ECT treatment fell from 90.1% in 1996 to 84.1% in 2000. Blacks comprised 4.1% of treatments in 1996 and 4.0% in 2000. Native American/Eskimo/Aleuts increased from 0.2% in 1996 to 0.6% in 2000. Asian/Pacific Islander increased from 2.0% in 1996 to 3.7% in 2000. Other increased from 2.2% in 1996 to 3.7% in 2000. Unknown increased from 1.4% in 1996 to 3.7% in 2000. The chi-square test revealed that the relationship was statistically significant ($p < 0.05$), indicating that there was some changes in patients race between 1996 and 2000.

**ETHNICITY**

Ethnicity is identified as Hispanic, non-Hispanic and unknown. Hispanics accounted for 5.3% of those receiving ECT in 1996 and decreased to 2.8% in 2000. The non-Hispanic category accounted for 86.3% in 1996 and 84.3% in 2000. The unknown category increased from 8.4% in 1996 to 12.9% in 2000. There was a significant change in ethnicities between 1996 and 2000 primarily in the Hispanic and unknown categories ($p$-value < 0.001).

**LENGTH OF STAY**

The average length of stay was 18.93 days in 1996 and 15.92 days in 2000. A t-test yielded a $p$-value less than 0.001, which is statistically significant, with a mean difference of 3.004 days difference between 1996 and 2000. The length of stay decreased significantly for patients receiving ECT from 1996 to 2000.

**PRINCIPAL DIAGNOSIS**

There were 182 different principal diagnoses among patients who received ECT. There is a wide variability of principal diagnosis in both 1996 and 2000. Diagnoses such as anorexia, dementia, atrial defibrillation may be very patient specific and not commonly attributed to ECT (see Table 1 for complete list of diagnoses for patients receiving ECT in
There were 68 diagnoses for both 1996 and 2000 that had fewer than five cases. Those 68 cases were eliminated in order to test for significant differences in diagnosis between 1996 and 2000. All the cases within major depression were collapsed into one group and all cases within bipolar were collapsed into one group. See Table 1 for specific major depression and bipolar classifications. The four categories remaining after eliminating diagnoses with fewer than five cases and collapsing major depression and bipolar were: paranoid schizophrenia, major depression, bipolar disorder, and schizo-affective disorder. A chi-square test revealed no significant differences in diagnoses in any category between 1996 and 2000. There were 72.3% of patients with a diagnosis of major depression that received ECT in 1996 and 72.7% who received ECT in 2000. There were 17.0% of patients with a diagnosis of bipolar that received ECT in 1996 and 16.8% who received ECT in 2000. There were 0.5% of patients with a diagnosis of paranoid schizophrenia that received ECT in 1996 and 0.2% in 2000. There were 2.8% of patients with a diagnosis of schizoaffective disorder that received ECT in 1996 and 2.3% who received it in 2000. There were no significant differences found in any of the four major diagnosis between years.

**PAYER CATEGORIES**

There were 55.2% Medicare patients in 1996 and 48.5% Medicare patients in 2000 that received ECT. There were 6.0% Medi-Cal patients in 1996 and 4.5% Medi-Cal patients in 2000. There were 19.7% private coverage patients in 1996 and 44.2% private coverage patients in 2000. There was 11.0% self pay patients in 1996 and 1.2% in 2000. There were 3.7% other payer patients in 1996 and 0.2% in 2000. Worker’s Compensation, other government and county indigent programs were collapsed into one category due to the small numbers of cases in each category. There was 0.7% of combined categories in 1996 and 1.4% in 2000.

The most significant changes were in the Medicare, Medi-Cal, and private coverage categories. Medicare patients that received ECT decreased by 6.7% from 1996 to 2000. This is contrary to previous literature that indicated a rise in ECT use among Medicare patients (Rosenbach et al., 1997). Medi-Cal patients receiving ECT declined by 1.5%. The most dramatic change was the use of ECT for patients with private coverage. There was a 24.5% increase in patients with private coverage receiving ECT from 1996 and 2000.
TRENDS IN ECT TREATMENT

In analyzing the data, there were several significant findings among those patients receiving ECT in California. The patient demographics of those receiving ECT changed very little from 1996 to 2000. Gender, age, and diagnosis were consistent for both 1996 and 2000. Only the length of stay and composition of payer categories had significant differences between 1996 and 2000.
CHAPTER 5

DISCUSSION AND CONCLUSION

The primary purpose of this study was to examine ECT utilization in association with demographics, payer source, and length of stay between 1996 and 2000. The objective was to evaluate how managed care and government funded programs were affected by the MHPA and how it affected ECT utilization within California.

REVIEW OF SIGNIFICANT FINDINGS

Significant findings include the identification of ECT patient profiles. Further findings include little variation among gender, age and race between 1996 and 2000. As expected, results show that women with a diagnosis of depression were the primary recipients of ECT. Age also appears to be an associated factor, in that patients with an average age of 57 were most likely to receive ECT in both 1996 and 2000.

Length of stay for patients receiving ECT changed significantly from 1996 to 2000, decreasing by three days. There may be several reasons contributing to the significant decrease including utilization of ECT on an outpatient basis, increased efficacy of ECT in the population sample, and greater constraints put on inpatient hospital authorizations by utilization review agencies within managed government programs and private insurers.

Other significant findings of this study indicate that there was a significant difference among payer source in the utilization of ECT after MHPA. ECT utilization appears to be highest among government funded payment sources. This may be due to a number of factors including population dynamics, socio-economic reasons, state legislation, funding factors and physician bias.

There are several reasons that the Medicare population would be highest in both years. The Medicare population tends to be older, which reflects the demographics of those receiving ECT. Other studies indicate that ECT use was significantly higher among disabled Medicare patients than that of elderly Medicare patients (Rosenbach et al., 1997). The disabled Medicare population tends to have more acute and chronic mental illness which
could potentially benefit from ECT use. In addition, the Medi-Cal population encompasses a population that tends to have chronic and severely mentally ill patients who tend do be the ideal candidates for ECT.

The third most prevalent category was ECT patients under managed care. There was a tremendous increase in patients receiving ECT from 1996 to 2000 in this category. Utilization went up 24.5% from 1996 and 2000. This significant increase may suggest that the MHPA of 1996 had significant impacts on mental health services, specifically the use of ECT. Procedures such as ECT that are associated with long and costly inpatient treatment may be particularity vulnerable to the effects of the MHPA. The extension of annual and lifetime dollars for mental health services would give this population greater access to high cost treatments such as ECT and appears to have had a significant impact on the numbers in this study.

Another impact on the numbers receiving ECT in the private payer category is the impact on length of stay and the decreased costs associated with it. As managed care companies try to control costs, the overall inpatient stay may decrease from ECT making it a desirable treatment option. A number of studies have identified ECT as a potential treatment to save costs as a result of the decreased length of stay when administered promptly (Cohen & Casimir, 1989; Rosenbach et al., 1997).

**IMPLICATIONS**

The findings related to patient profile and ECT use are consistent with previous findings (Grosser et al., 1975; Mills et al., 1975; Sylvester et al., 2000). There has been very little change in patient diagnosis, gender, or race between 1996 and 2000. This suggests that there is, to some extent, consistency between diagnosis and treatment protocols. The demographics of patients receiving ECT also appear to be consistent with the dynamics of people suffering from mental illness. A number of studies indicate high percentages among female and elderly populations (Bursten et al., 1992). The patient demographics of this study were in line with previous research that indicated that blacks tended to be less likely than whites to receive ECT treatment. (Thompson et al., 1994). A number of factors may be contributing to the decrease of ECT use in lower socioeconomic groups including cultural barriers, racial biases, knowledge deficits and altered referral processes. Research also
indicates that ECT is rarely available in state or county mental hospitals (Thompson et al., 1994). Further research is needed to identify how types of hospitals and their practices are affecting ECT in different socioeconomic groups.

The findings from this study indicate that payer category may have been impacted from the MHPA. This was a very small subset of patients receiving a very specific type of mental health treatment which may reflect a greater influence from the MHPA. The overall question is whether legislation can make a substantial difference in the access to mental health treatment. Early findings suggested that the MHPA had very little or no effect on mental health treatment (Kjorstad, 2003). Many of the studies looked at overall cost increases or decreases as a result of the law and provided very little data and research on specific treatments associated with the passing of this law. This is a good starting point for identifying high cost mental health treatments that are primarily affected by such laws. As the legislation continues to change and states continue to follow national mandates by passing state parity laws, it will become easier to identify trends in mental health as a result of such legislation.

The implications are that legislation, managed care, and government programs have begun to affect both access to mental health treatment and the type of care patients receive. Physicians and hospitals are impacted by the reimbursement mechanisms and utilization reviews that have been increasingly used as a means to control costs. These findings emphasize the need for government programs and managed care companies to: (1) examine the impact of legislation on patient dynamics and access to specific treatments such as ECT, and (2) identify how treatment may affect length of stay and patient outcomes. As managed care continues to try to control costs, it is no longer adequate to solely identify treatment efficacy. It is imperative that associated costs, outcome measures, length of stay, and recidivism rates are closely analyzed to identify the best treatment methods.

**STUDY LIMITATIONS**

Limitations of the study include the nature of the data and limitations on analysis. The data utilized in this analysis was limited to the data already existing in the California Office of Statewide Planning and Development. There are a number of variables that were not accessible with this data including unique patient identifiers, the legalities associated with ECT use, and any delay in the initial use of ECT upon admission. Unique identifiers for each
patient utilizing ECT limit the analysis of recidivism of certain patients and the number of times one patient has received ECT within the designated year. There was also no way to identify when ECT was initiated using this data set. It would be of importance to identify any legalities that may have delayed the use of ECT in patients and to identify when the patients first treatment was initiated in relation to admission and discharge dates.

Other limitations include the scope of the analysis. This study was limited to patient demographics, length of stay and payer categories. There was no analysis of the efficacy of treatment or patient outcomes.

It would also be advantageous to identify trends within the hospitals. There have been a number of studies that have indicated that depressed patients in private nonprofit and public general hospitals were significantly more likely to receive ECT than in private for-profit general hospitals. The number of hospitals performing ECT in California in 1996 and 2000 decreased significantly. This study was limited to the numbers of hospitals available in the data and did not identify the types of hospitals performing ECT or reasons why hospitals performing ECT decreased.

Due to a small sample size of patients receiving a very specific mental health treatment, it was difficult to assess the full impact of the MHPA on overall mental health services. Having larger numbers for states that are subject to parity laws will increase the statistical power and enhance the generalizability of the results. Given the substantial problems associated with the differences between government funded and private insurance, and the complexity at which legislation affects care, more sophisticated analysis of data is needed.

**RECOMMENDATIONS**

It is important that policy makers, healthcare administrators and practitioners recognize that those receiving mental health services may not be receiving equal care in regard to quality and type of treatment. It is important to identify economic factors that affect treatment services for a particularly vulnerable population. The findings must be utilized to regulate treatment programs and insurance coverage to ensure equal access and treatment to various groups, including different genders, races, and age groups.
The differences in utilization among payer category, race, age, and gender may indicate significant problems in the provision of mental health services and treatment modalities. The findings may reflect a lack of knowledge among policy makers, clinicians, and professionals regarding mental health populations, appropriate treatment, disparities among socio-economic groups in relation to insurance coverage, and conscious or subconscious prejudices toward the mentally ill. Education of professionals and policy makers to increase awareness of the issues facing mentally ill patients who meet criteria for ECT may allow for improved equality of care and treatment among such populations. Advocacy for ECT in treatment protocols under managed care and government plans must also take into account the current disparities among payer sources in order to provide adequate care and standardized treatment protocols.

**FUTURE RESEARCH**

Future research includes the examination of specific patient readmission rates and further state and nationwide trends. Further studies identifying clinical rationale for the selection of ECT use may be helpful in identifying socioeconomic disparities. Examining the lengths of stay and recidivism rates of patients receiving ECT would give a better picture of its overall effectiveness on patient success and utilization of health care overall.

There is currently a lack of clear empirical data as to why ECT is utilized among affluent, socio-economically advantaged patients. It would be advantageous to understand why socio-economically disadvantaged patients do not have equal access to ECT treatment. Detailed analysis of clinical, attitudinal, cultural, and financial factors would help to better understand patient selection and the use of ECT.

Another area of future study is the cost-effectiveness of ECT treatment and the identification of whether or not outpatient ECT is effective with patient outcomes and patient readmission rates. It is also of interest to note any geographical differences within the United States. With growing regulatory provisions for ECT and data reporting, there will ultimately be a better way to analyze the data for differences in outcomes associated with ECT.

As legislation changes and mandates provide improved regulations in mental health services it will become important to identify how such laws as the MHPA effect access to
care and utilization of services. Future parity laws may have dramatic effects on both access
to mental health services and treatment options.

**CONCLUSION**

There are a number of benefits from examining trends for mental health services as
the legislation and management of both government funded and private insurance companies
change. With the growing penetration of managed care in both government funded programs
such as Medicare and Medi-Cal, as well as the utilization review of private insurance
companies, it will become increasingly more important to understand how these are affecting
courses of treatment and outcome measures. Further research surrounding parity laws is
important to ensure that benefits are appropriately structured and that gatekeepers and policy
makers are adequately informed about treatment options.
REFERENCES


