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COMMONWEALTH of VIRGINIA

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December 11, 2000

The Honorable Franklin P. Hall, Chairman
Health and Human Resources Subcommittee of House Appropriations
P.O. Box 3407
Richmond, Virginia 23235

Dear Delegate Hall:

I am pleased to forward the enclosed report, Medicaid Coverage for Substance Abuse Treatment: A Process for Evaluating Cost Benefits and Cost Offsets, for your review and consideration. This report represents a collaborative effort between this department and the Department of Medical Assistance Services to develop methods of assessing the cost-savings and benefits of using Medicaid to support substance abuse treatment, as required in the 2000 Appropriations Act.

This report cost the Commonwealth approximately $8,000 to produce, attributed to staff time conducting literature reviews, consultation within both departments, and report writing. Please do not hesitate to contact me if you have any questions or concerns about this report.

Sincerely,

Richard E. Kellogg

REK/mer

xc: The Honorable Claude A. Allen, Secretary of Health and Human Resources
Dennis Smith, Director, Department of Medical Assistance Services
Cathleen Newbanks, Associate Commissioner, Community and Facility Services, DMHMRSAS
James M. Martinez, Acting Director, Office of Substance Abuse Services, DMHMRSAS
Martha J. Mead, Director, Office of Legislation and Public Relations, DMHMRSAS
Susan Massart, Legislative Fiscal Analyst, House Appropriations

Medicaid Coverage for Substance Abuse Treatment: A Process for Evaluating Cost Benefits and Cost Offsets

A Report to the Governor
and to the
Chairmen of the
Senate Finance
and
House Appropriation
Committees

in response to the

Conference Report on House Bill 30
Item 323 #5cK

Medicaid Coverage for Substance Abuse Treatment:
A Process for Evaluating Cost Benefits and Cost Offsets
Executive Summary

The 2000 Session of the Virginia General Assembly appropriated $5,056,251 in General Funds to support expansion of Medicaid coverage for substance abuse treatment, effective July 1, 2001. This appropriation was made after receiving information from a feasibility report jointly conducted by the Department of Mental Health, Mental Retardation and Substance Abuse Services (DMHMRSAS) and the Department of Medical Assistance Services (DMAS). The mechanism of federal fund participation available from Medicaid effectively doubles this amount. In addition, the two departments were directed to develop regulations to support the expansion and to develop a plan to study the cost benefits and cost offsets of using Medicaid to fund substance abuse treatment.

Fairly extensive studies have been conducted about the cost benefits and cost offsets of providing substance abuse treatment. Most studies have used information from health maintenance organizations that cover the employed, middle class population. These studies consistently found that health care utilization costs were lowered after treatment, but strongly indicate that these costs are only apparent several years after the treatment episode.

Recently some studies have been conducted using the population that relies on publicly funded substance abuse treatment. These studies have also found savings in the area of health care utilization, as well as reduced costs associated with the criminal justice system. The Medicaid population, however, is different from other publicly supported populations, in that it consists mostly of children, pregnant women, women with dependent children, and the elderly, aged, blind and disabled. Members of these groups are less likely to interact with the criminal justice system than the general population seeking publicly funded substance abuse treatment services.

The proposed plan includes two studies. The first would review health care utilization of persons who had received Medicaid funded substance abuse treatment for the four years prior to treatment and the four years after the first treatment episode. This report would examine these data every four years so that the information could be available for the Governor's use in constructing his budget. This study would cost approximately $110,000 to conduct.

The second study reviews the impact the use of Medicaid revenue has had on public treatment capacity. Since persons eligible for Medicaid are currently treated with support from state, general and local funds, use of Medicaid resources to support this population allows the current resources to support nonMedicaid populations or services not covered by Medicaid. This study would also track the cost of the Medicaid substance abuse benefit.

Medicaid Coverage for Substance Abuse Treatment:
A Process for Evaluating Cost Benefits and Cost Offsets

I. Background

The 2000 Session of the General Assembly appropriated $5,056,251 effective July 1, 2001 to support reimbursement by Medicaid for substance abuse treatment. This appropriation was made following a study jointly conducted by the Department of Mental Health, Mental Retardation and Substance Abuse Services (DMHMRSAS) and the Department of Medical Assistance Services (DMAS) concerning the feasibility of expanding the use of Medicaid funds to support substance abuse treatment. [1]

The results of this study were documented in a report in "The Study of Expansion of Medicaid Coverage for Substance Abuse Treatment, presented in 1999 to the House Appropriations Committee and the Senate Finance Committee, and were based on analysis of DMAS enrollment data, utilization and cost data from the community services boards (CSBs), and encounter data from other sources. The report estimated that approximately 6,000 Medicaid enrollees per year would seek substance abuse treatment, at a total estimated annual General Fund (GF) cost of $5,056,251. Given that Virginia's GF "match" ratio for FFP is approximately 49:51 percent, these funds would generate federal fund participation (FFP) of approximately $5,436,073, for a total of $10,492,324. These funds would support a full continuum of care for children and adults, including emergency services, outpatient treatment, targeted case management, day treatment and evaluation and assessment, and residential treatment for children only. [2] The addition of these funds would provide some support for expanding treatment capacity for the publicly funded substance abuse treatment system.

The Conference Report on House Bill 30 required DMHMRSAS and DMAS to develop amendments to the State Plan for Medical Assistance to address these services, and draft amendments have been prepared for submission to the regulatory process as required by the Virginia Administrative Process Act (Sec. 9-6.14:1 et seq., Code of Virginia) and federal requirements for review by the Health Care Finance Administration (HCFA), the federal agency which regulates Medicaid. [3] In addition, the 2000 Appropriation Act required DMHMRSAS and DMAS to "design a process for evaluating the costs and benefits, including cost offsets in other programs, of reimbursement by Medicaid and the Commonwealth's Children's Medical Security Insurance Plan of substance abuse treatment services on an annual basis," prior to implementation of coverage.[4] This document provides some background about cost-benefit studies, cost-offset studies, and applications of these evaluation methods to substance abuse treatment. It contains a proposed plan to address the intent of the budget item, which includes a proposed execution schedule and an estimated budget.

II. Review of Cost Benefit and Cost Offset Study Models

In order to develop a plan to implement a cost benefit study of using Medicaid to support substance abuse treatment, it is important to understand the elements of cost benefit and cost offset studies. This section of the report provides some information about these types of evaluations, reviews cost benefit and cost offset studies, and identifies their strengths and weaknesses related to design.

A. Elements of Cost Benefit Analysis

Cost benefit studies compare and contrast measures of the cost of treatment with measures of treatment effectiveness and the benefits achieved as a result of treatment. Holder [5] identified three variables or components of these types of evaluations.

1. *Cost:* The actual cost to deliver alcoholism treatment itself, usually influenced by the treatment modality or approach used to achieve recovery or rehabilitation, as well as the physical setting in which the treatment occurs, for example, inpatient, residential facility, outpatient, halfway house, and so forth.

2. *Cost/Effectiveness:* The relationship of the cost of treatment to the effects achieved, on the average, for patients. Effects would address outcome measures such as abstinence, relapse or readmission; changes in drinking levels; improved social or interpersonal relationships; and employment and/or work absences.

3. *Cost/Benefits:* The relationship of the cost of treatment to the benefits achieved as a result of treatment. Benefits are most often expressed in economic terms, such as changes in income, reduced social services and associated costs, reduced expenditures for other services for alcoholics or their families, and increased economic productivity resulting from a longer life or reduced impairment.

These components can be utilized in a variety of study designs. Cost-effects studies measure the effects of treatment and the average cost of treatment in a specific modality, e.g., hospital-based inpatient, residential, day treatment, outpatient, and compare the unit cost with the effect. Studies related to alcoholism have indicated that low-cost treatment, e.g., treatment provided in a non-hospital setting, can be very effective. [6,7]

Cost offset research is designed to determine how much of other costs are saved because of the investment in treatment. In substance abuse, most of this research has focused on cost offsets for health care, because alcoholics, who constitute the predominant type of substance dependent or abusing individuals, are known to utilize health care at a much higher rate than non-alcoholics with similar demographic characteristics.[8] These studies have typically been designed to collect data on the effect of treatment on health care utilization using either one of two methods. In one method, information about health care utilization from a group of people who received treatment for substance abuse is compared with another similar group of people with substance

abuse problems who did not receive treatment. In the best applications of this design, the study participants who are similar regarding demographic characteristics and severity of illness are randomly assigned to each group. This approach raises ethical concerns about denying treatment to a person who needs it as well as creating technical problems with creating a "matched" group. Another method is to compare health care utilization for persons who received treatment before and after the treatment occurred. This approach requires access to historical health care utilization data as well as the ability to collect information about health care utilization after treatment for substance abuse has occurred.

B. A Review of Other Studies

Cost offset studies, as a type of cost/benefit analysis, have been given considerable attention in recent years, and typically focus on the impact of treatment on other health care costs. Specifically, these studies seek to determine if there is a cost reduction or "offset" associated with treatment and, if so, how much of other costs are saved as a result of treatment. In a review of twelve cost benefit studies of alcohol, Jones and Vischi found that reductions in health care ranged from 26 percent to 69 percent. The design of the studies included both those with control groups as well as those with pre and post treatment measures. The study participants, were generally employed adults whose health care, including treatment for alcoholism, was covered by a health maintenance organization. Each study reviewed had a fairly small group of subjects (fewer than 100). The researchers noted that one-year both before and after treatment is not long enough to measure the actual impact of the treatment intervention on medical care utilization. "Substantial increases in medical care utilization can begin as early as two to three years before ADM (alcohol, drug and mental health) treatment, and the full impact on medical care utilization may not be exhibited until as long as five years after the ADM intervention. Thus, an ideal study should cover several years before and after ADM treatment." [9]

Holder and Blose[10] reiterate this point, attributing it to the statistical artifact of regression. This means that extreme measures of health care utilization may artificially appear to have improved as a result of treatment, when the apparent improvement in health care utilization is actually due to the fact that the original measure was extremely high. They recommend that the best way to control for this statistical phenomenon is to extend the measurement period for health care utilization far beyond 12 to 24 months typically utilized by cost-offset studies. They tracked utilization for 260,000 enrollees employed by private corporations and compared the average monthly cost per person pre-treatment with the same measure post-treatment. Measures were taken 48 months pre-treatment and 48 months post-treatment. The measures were also compared to those of a control group of diagnosed, untreated alcoholics in the same group.

Holder and Blose describe a "ramp effect" of health care utilization escalating and then dropping sharply in the period just prior to treatment for alcoholism. They attribute this effect to three factors: (1) the life crises and disruption just prior to the initiation of treatment; (2) cost of the first treatment event for alcoholism; and (3) the continuation of alcoholism treatment after the initiation of treatment.

Holder and Blose found that health care utilization costs of persons in the treatment group were slightly lower pretreatment than the untreated group, and that they decreased fairly rapidly to the same level or lower level as prior to treatment, whereas the health care utilization costs of persons not in treatment declined more slowly. In financial terms, the pre-treatment costs of the persons in treatment averaged $159 per month in the 48 months prior to treatment, whereas the nontreated persons averaged $171. In the 48 months after treatment, costs for the treated group, including the cost of alcoholism treatment, rose to $228 per person per month, while the cost of the untreated group during the same 48 months rose to $346 per person per month. Therefore, the health care utilization of the group that participated in treatment increased 43.40 percent, while the health care utilization costs of the group that did not participate in treatment rose 102.34 percent, in effect more than doubling their costs over this same period of time. This suggests that the cost of the treatment adds to the health care utilization cost, but that the utilization of other health care resources is reduced. This study also further stresses the importance of taking measures of health care utilization over a fairly long period of time, in order to accurately assess the impact of treatment.

Recently, a number of states have conducted cost/benefit analysis concerning the treatment of alcohol and other drug abuse. The National Opinion Research Center conducted a study for the State of California that examined a wide array of measures of effectiveness, including reduced use of alcohol and other drugs and criminal activity.[11] This study was a point-in-time study (collected data from a specific period of time) which used outcome measures of post-treatment effects (data collected at an average of 15 months post discharge) for 1,900 persons in treatment. The data were collected from individual interviews with the clients. This study concluded that $7 were saved for every dollar spent on treatment.

The State of Oregon also conducted a point-in-time cost/benefit analysis of 1,100 adults using existing state databases to measure treatment outcomes. [12] These existing data systems included information on treatment monitoring, law enforcement, offender profiles, social services, and Medicaid. The study reviewed data on each participant two years prior to treatment and three years post-treatment. This study concluded that $5 were saved for every dollar spent on treatment.

Washington State has conducted a number of studies related to the cost effectiveness of substance abuse treatment. One study, of particular relevance because it concentrated on the impact of substance abuse treatment on Medicaid costs, compared Medicaid medical costs of 344 persons who received treatment (supported by all public funding sources) in 1989 to a similar group who were eligible to receive treatment but did not.[13] This study, however, excluded persons enrolled in Medicaid who were also enrolled in Aid to Families with Dependent Children (the "welfare" benefit in place at that time which has since been replaced by Temporary Assistance for Needy Families) because of the difficulty in assigning a matched control sample to this population, which had a higher rate of pregnancy than the rest of the Medicaid population. This exclusion is significant because these women typically constitute a large proportion of Medicaid enrollees. The study tracked Medicaid costs for five years after treatment and found that

treated persons, on an average, cost $4,500 less than untreated persons, compared to an average cost of substance abuse treatment of $2,300. The effect was largest for persons who had Medicaid medical expenses prior to treatment ($7,900 less). This study also noted that most of the Medicaid costs were incurred by relatively few persons. The savings were greater for women receiving inpatient medical care ($5,316) than women receiving outpatient medical care ($600). The disparity for men was much less notable ($3,597 for inpatient and $2,080 for outpatient).

The federal Center for Substance Abuse Treatment recently sponsored a cost benefit study using national data.[14] This study, supported by a National Evaluation Data Services contract, reviewed data for over 5,000 clients participating in treatment at 72 programs participating in the National Treatment Improvement Evaluation Study. Costs associated with health, welfare benefits, criminal activity, and employment income were tracked for the year prior to treatment and the year after treatment. Generally, the study found very little change in welfare costs, large reductions in crime, and reductions in health care utilization costs. For instance, total hospital costs fell by 13 percent ($200) on average in the first year after treatment. Although physician and clinic costs rose about 13 percent, these costs may have contributed to fewer, less costly hospital stays and may indicate more appropriate and cost-effective use of health care resources. Overall, this study found that for every $1 spent on treatment, more than $4 were saved.

III. Proposed Plan to Evaluate Virginia's Use of Medicaid to Support Substance Abuse Treatment

A. Considerations for a Virginia Study

In order to design an effective evaluation model using cost benefits and cost offsets of using Medicaid to support substance abuse treatment in Virginia, certain system conditions must be described to prevent unwarranted assumptions from influencing the interpretation of the results. First, it is crucial to remember that persons entitled to or enrolled in Medicaid are already receiving substance abuse treatment, usually financed by either the federal Substance Abuse Prevention and Treatment Block Grant or the General Fund appropriation. Both of these funding sources are distributed to CSBs, largely on the basis of population. Estimates of DMHMRSAS, confirmed by William M. Mercer, Inc., indicate that about 10 percent of the individuals receiving substance abuse treatment services from CSBs are Medicaid eligible or enrolled. Thus, expanding the Medicaid benefit does not impact demand for treatment as might be expected if access to services had been denied due to lack of coverage. The major potential impact of expanding the Medicaid benefit is simply to expand the fiscal resources available to support the treatment needs of a relatively small proportion of the population served, possible because of the federal fund participation which will become available to match General Funds expended for this purpose.

Second, when the feasibility study was presented to the Senate Finance and House Appropriations Committee in 1999, it was assumed that the structure of the service delivery system would be essentially unchanged, e.g., that services would be provided exclusively through the CSBs. In the interim, however, the Health Care Financing

Administration (HCFA) has voiced concern over apparent lack of consumer choice of provider when services are provided by the CSBs. To accommodate this concern, the proposed regulations for expanded substance abuse treatment services allow services to be provided by any qualified provider, with the exception of case management services. Recognizing the importance of a gatekeeper function to the consumer in navigating a complicated treatment delivery system, CSBs are the sole providers of case management services. The precise fiscal impact of this decision on the traditional public service system is yet unknown. In situations in which the CSB is the consumer's choice of provider, the CSB will experience direct financial gain. When the consumer chooses a non CSB provider, the capacity that consumer would have utilized in the CSB system will be available to use in a different way. Options include providing services to a non-Medicaid eligible consumer, such as a young man involved in the criminal justice system, providing services not covered by Medicaid to a Medicaid eligible person, or providing services to a "working poor" person.

Third, since the implementation of TANF has significantly reduced eligibility for Medicaid, the numbers of persons entering substance abuse treatment services for whom Medicaid could have paid may have also been reduced. This may mean that persons still receiving Medicaid and seeking substance abuse treatment will require more treatment and utilize health care at a higher level than the group of persons eligible for Medicaid prior to TANF. Measuring the "cost-benefits" of this system requires a very focused application of the cost-benefits model.

Finally, since the population eligible for Medicaid largely consists of children, pregnant women, women with dependent children, and elderly, blind and disabled persons, the likelihood of impact on the criminal justice system is limited.

B. Plan to Utilize Cost Benefits and Cost Offset Methods to Evaluate Expanded Use of Medicaid to Support Substance Abuse Treatment

This proposed plan as described below incorporates some of the experience provided by other researchers and addresses some issues specific to Virginia's evolving public treatment system. Essentially two studies would be conducted. The first would focus on health care utilization costs by persons whose substance abuse treatment had been paid for, in whole or in part, by Medicaid. The second study would focus on capacity expansion for the public system, which might be attributed to the use of Medicaid as a funding source.

Study 1. The impact of Medicaid funded substance abuse treatment on the cost of Medicaid funded health care.

a. Data sources. The measures of cost benefit and cost offset would focus exclusively on Medicaid claims information. A contractor using claims data tapes provided by DMAS would conduct the analysis.

b. Data analysis. The analysis of this information would be focused on identifying the cost impact of Medicaid funded substance abuse treatment on Medicaid claims. Identification of particular utilization patterns would be a critical task of this study. Are there particular groups of beneficiaries who appear to benefit more than others from substance abuse treatment, as measured by reduced health care claims? Does the type of substance abuse treatment have an impact? Is there a difference in the types of health care that are utilized that can be attributed to the type of substance abuse treatment received?

   The resulting report would analyze the Medicaid claims data identifying first the particular characteristics of persons who had received treatment for substance abuse funded by Medicaid. This analysis would include gender, age, ethnicity, and type of eligibility. The report would review the impact of these user characteristics on medical claims in general to establish patterns of use by beneficiary characteristics. The report would also identify the types of substance abuse treatment services used by beneficiary characteristics. It would identify services provided by CSBs as opposed to private providers, and identify the types of services, e.g., outpatient, intensive outpatient, day treatment, case management, evaluation and assessment by beneficiary characteristics, and examine the impact types of services and length of service had on other health care utilization, as measured in claims paid and amounts paid. The report would also examine the types of health care claims paid, e.g., outpatient physician care, inpatient care, etc., to see if these are influenced by the type of substance abuse treatment received and beneficiary characteristics.

c. Timeframe. Although the budget language calls for an annual report, the literature clearly indicates that cost-savings, when they occur, take a period of several years to accrue. The benefits under discussion will not become available until July 2001, so cost benefits of any type will not be evident for some years after that. Given that the main objective in performing the types of analysis required in cost benefit and cost offset studies would be to inform the budget process, this plan proposed conducting and publishing this analysis every four years, to coincide with the development of the biennial budget. Reports would review health care utilization as expended by the Department of Medical Assistance Services for persons who were enrolled in Medicaid and who received Medicaid funded treatment for the four year period prior to treatment and the four year period after the first episode of Medicaid funded treatment. The proposed schedule of reports would be as follows:

   The first report would be ready Summer 2003 for development of the 2004-6 budget, and would review health care costs, as measured by Medicaid claims data, for persons who received Medicaid funded substance abuse treatment from July 1, 2001 to June 30, 2002. Claims for this group of beneficiaries would be tracked from July 1, 1997 to June 30, 2002.

   The second report would be ready Summer 2007 for the development of the 2008-2010 budget and would review health care cost data based on Medicaid claims for persons who received Medicaid funded substance abuse treatment from July 1, 2002

to June 30, 2006, tracking medical care claims from July 1, 1998 to June 30, 2006. The third report would encompass the entire possible schedule of eight years of health care utilization data. It would be prepared Summer 2011 for the 2012-2014 budget, and would review Medicaid claims data from July 1, 2002 to June 30, 2010 for persons receiving Medicaid funded substance abuse treatment from July 1, 2006 to June 30, 2010. Reports would continue to be generated every four years in the same pattern.

d. Budget. DMAS estimates that data processing, programming and other data management would cost the agency about $4,000 per report in today's dollars.[15] Contractor fees are estimated at $100,000, per reporting period, based on the experience of DMHMRSAS with William M. Mercer, Inc., in conducting the feasibility study. [16] Managing the study and drafting the report would cost DMHMRSAS about $10,000. Thus, the total cost of producing this report every four years would be approximately $114,000 for each year that the report is produced.

Study 2. The impact on public substance abuse treatment service capacity of using Medicaid as a funding source for substance abuse treatment.

Two measures can be used to assess the impact that use of Medicaid funds for substance abuse treatment has had on treatment capacity. The simplest approach is to compare CSB utilization of substance abuse treatment services at regular intervals, beginning with the current fiscal year (2001) as the baseline, since this would be the last complete year before the expanded Medicaid benefits are available. This information could be compared and tracked over a period of years. This data, however, must be interpreted in light of other influences that may have influenced capacity, such as increases in the federal Substance Abuse Prevention and Treatment Block Grant or other funding sources. Data for this review could be collected from the Fourth Quarter Report of the CSB Performance Contract. The other measure is Medicaid claims data regarding utilization for substance abuse treatment. This measure is important because it will capture services provided outside of the CSB system. This information could easily be captured from the DMAS claims data at minimal cost. Both of these data sources would be easy to analyze and would not require expertise outside of either department.

IV. Recommendations

This study plan has presented information about how the economic impact of substance abuse treatment can be studied, and how that impact can be measured. It has presented information gathered on populations covered by private resources as well as public funds. The report provides two independent methodologies that can be employed separately or in tandem.

The opportunity to study the impact of using a particular funding source to fund a service which is also supported by several other sources, and in a system that is structurally evolving, presents some complex challenges. Nevertheless, if the funding is available, this study could be approached as a pilot effort for several funding cycles, as

described in this study. Literature clearly indicates that health utilization costs are reduced by substance abuse treatment, and this finding is likely to hold true for the population eligible for Medicaid. If funding is available to support this effort in a manner that will inform budget development, this information may prove to be highly informative. At the very least, utilization of substance abuse treatment funded by Medicaid should be, and will be, tracked, as well as the impact on other publicly funded substance abuse treatment capacity (Study 2).

Although the budget language did not call for an evaluation of the provider system, the General Assembly could also require an evaluation of the service system providing substance abuse treatment under the regulations governing use of Medicaid funds for this purpose. This information would be especially useful because the proposed regulations allow any provider who can meet the provider qualifications to provide the designated services. This approach was taken to provide maximum choice of provider for the consumer. It would be important to assess whether or not the goal of consumer choice was achieved by structuring the regulations for services in this manner. Such an evaluation should also focus on consumer satisfaction, successful outcomes for the consumer, and the cost-effectiveness of providing services.

Notes

[1] Currently, Medicaid supports only two substance abuse treatment services, residential and day treatment, both restricted to pregnant and post-partum women. Reimbursement for these services became available in 1998. However, the range of services available through the community services board system is available to any person, regardless of ability to pay or payment source.

[2] Federal regulations governing the use of Medicaid funds prohibit reimbursement for residential services provided to persons between the ages of 18 and 64 in facilities larger than 16 beds. This restriction eliminates most residential substance abuse treatment facilities for adults in Virginia.

[3] Item 319 HH, Chapter 1073, Appropriation Act, 2000 Session, and Conference Report on House Bill 30, Item 323#5cL, March 10, 2000, 2000 Session of the Virginia General Assembly.

[4] Conference Report on House Bill 30, Item 323#5c.J and K., March 10, 2000, 2000 Session of the Virginia General Assembly.

[5] Holder, H.D., The Cost Offsets of Alcoholism Treatment, Recent Developments in Alcoholism, Volume 14: The Consequences of Alcoholism, Edited by Galanter. Plenum Press, New York, 1998.

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[10] Holder, H.D., and Blose, J.O, The reduction of health care costs associated with alcoholism treatment: a 14-year longitudinal study. Journal of Studies on Alcohol 53 (4): 292-302, 1992.

[11] Gerstein et al. Evaluating Recovery Services: The California Drug and Alcohol Treatment Assessment (CALDATA) General Report, State of California, Department of Alcohol and Drug Programs, 1994.

[12] Finigan, Michael. Societal outcomes and cost savings of drug and alcohol treatment in the State of Oregon, February 1996.

[13] Luchansky, B. Cost savings in Medicaid medical expenses: An outcome of publicly funded chemical dependency treatment in Washington State. (Briefing Paper #4.30) Washington State Department of Social and Health Services, June 1997.

[14] Koenig, L., Donmead, G, et al. The Costs and benefits of substance abuse treatment: Findings from the National Treatment Improvement Evaluation Study (NTIES), National Evaluation Data Services, Center for Substance Abuse Treatment, August 1999.

[15] Conversation with Anita Cordill, Department of Medical Assistance Services, September 6, 2000.

[16] E-mail from Terrie Goens, Wm. M. Mercer, Inc., September 12, 2000.