NEDS

NATIONAL EVALUATION DATA SERVICES

THE COST AND COMPONENTS OF SUBSTANCE ABUSE TREATMENT

July 2001

CSAT
Center for Substance Abuse Treatment
SAMHSA

The Lewin Group

NEDS

NATIONAL EVALUATION DATA SERVICES

THE COST AND COMPONENTS OF SUBSTANCE ABUSE TREATMENT

Prepared by

Henrick J. Harwood
Sophie Kallinis
Connie Liu

The Lewin Group
3130 Fairview Park Drive, Suite 800
Falls Church, VA 22042
Tel: (703) 269-5500

July 2001

This document was supported by the Center for Substance Abuse Treatment, Department of Health and Human Services, Caliber/NEDS Contract No. 270-97-7016.

CSAT
Center for Substance Abuse Treatment
SAMHSA

TABLE OF CONTENTS

Page

FOREWORD

ACKNOWLEDGMENTS

EXECUTIVE SUMMARY . . . . . **i**

I. INTRODUCTION **1**

1. OVERVIEW OF RELEVANT RESEARCH 1

2. PURPOSE AND PARAMETERS OF THE PRESENT ANALYSIS 3

3. ORGANIZATION OF THE REPORT 3

II. METHODS **5**

1. MEASURING THE COST OF SUBSTANCE ABUSE TREATMENT SERVICES 5

2. THE DATA 11

III. RESULTS **13**

1. CHARACTERISTICS OF THE SAMPLE 13

2. TYPES OF EXPENSES OF SUBSTANCE ABUSE TREATMENT PROVIDERS 14

3. STAFFING PATTERNS OF SUBSTANCE ABUSE TREATMENT PROVIDERS 16

4. USE OF STAFF IN DELIVERING SERVICES 18

5. UNIT COSTS OF SERVICES 19

6. UNIT OF SERVICE COSTS VERSUS SLOT COSTS 23

TABLE OF CONTENTS (CONT.)

Page

IV. SUMMARY AND RECOMMENDATIONS 28

1. SUMMARY 28

2. IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE 28

2.1 Implications for Further Research 28
2.2 Implications for Policy 29
2.3 Implications for Treatment Practice 30

REFERENCES 32

FOREWORD

The Center for Substance Abuse Treatment (CSAT) works to improve the lives of those affected by alcohol and other substance abuse, and, through treatment, to reduce the ill effects of substance abuse on individuals, families, communities, and society at large. Thus, one important mission of CSAT is to expand the knowledge about and the availability of effective substance abuse treatment and recovery services. To aid in accomplishing that mission, CSAT continues to invest significant resources in the development and acquisition of high quality data about substance abuse treatment services, clients, and outcomes. Sound scientific analysis of this data provides evidence upon which to base answers to questions about what kinds of treatment are most effective for what groups of clients, and about which treatment approaches are cost-effective methods for curbing addiction and addiction-related behaviors.

In support of these efforts, the Program Evaluation Branch (PEB) of CSAT established the National Evaluation Data Services (NEDS) contract to provide a wide array of data management and scientific support services across various programmatic and evaluation activities and to mine existing data whose potential has not been fully explored. Essentially, NEDS is a pioneering effort for CSAT in that the Center previously had no mechanism established to pull together databases for broad analytic purposes or to house databases produced under a wide array of activities. One of the specific objectives of the NEDS project is to provide CSAT with a flexible analytic capability to use existing data to address policy-relevant questions about substance abuse treatment. This report has been produced in pursuit of that objective.

This technical report introduces a tool developed for CSAT to analyze the cost of substance abuse treatment services. It was developed by cost accountants for use related to substance abuse treatment evaluations. It has been extensively tested on the full variety of provider types. This report describes the approach and methods of this tool, and provides a basic understanding of why and when this (or a similar) tool should be considered for use.

Sharon Bishop
Project Director
National Evaluation Data Services

ACKNOWLEDGMENTS

We wish to acknowledge our reliance upon the guidance and direction of Ron Smith, Ph.D., Program Evaluation Branch, the Government Project Officer for the NEDS contract. We wish to thank Brian Yates, Ph.D., for his valuable and insightful comments on earlier drafts of this paper. We also gratefully acknowledge staff from the Substance Abuse and Mental Health Services Administration (SAMHSA) for their comments and feedback on this report.

A number of persons have contributed substantially to making this report possible. The staff at Capital Consulting Corporation developed and refined the "SATCAAT" protocol and have administered it in numerous clinics across the nation. Duane McCliggott J.D., CPA, Robert Bennett and Charles Brennan played central roles in this process and in collecting the data that have been analyzed in this report.

Caliber Associates is the prime contractor for NEDS in partnership with the Battelle Centers for Public Health Research and Evaluation (CPHRE), National Opinion Research Center of the University of Chicago, and the Lewin Group. We particularly want to express our appreciation to the Caliber team for their support and guidance, including Sharon Bishop, Irene Rich, Doug Fountain and others.

EXECUTIVE SUMMARY

1. INTRODUCTION

This document introduces a new tool available to study the costs of substance abuse treatment: the Center for Substance Abuse Treatment (CSAT) Substance Abuse Treatment Cost Allocation and Analysis Template (SATCAAT). The particular purpose and strength of the SATCAAT is the development of cost estimates for defined components and units of service that combine (often in different proportions by different providers) to constitute substance abuse treatment. The SATCAAT should be considered an example of an important approach to studying the costs of substance abuse treatment. The method is described and actual data are presented from a sample of providers in order to demonstrate the output and potential use.

The most important use of unit cost data is actually for accurate reimbursement of the costs of substance abuse treatment. Providers used the rudimentary "slot cost" method for several decades when financing was largely grant-based. However, with the inclusion of treatment into general health insurance and managed care plans, providers must have accurate data about their costs in order to negotiate realistic reimbursement rates and improve their ability to manage their finances. The unit cost method (whether developed using the SATCAAT approach or some other) provides these data.

The purpose of this document is to lay out the approach and methods of this tool, and to give the reader a basic understanding of why and when this (or a similar) tool should be considered for use.

2. METHODS AND DATA

The cost data were collected on site by professional cost accountants using the SATCAAT. The method applies generally accepted accounting principles to the cost estimation. The protocol rigorously compiles data on provider expenses and then allocates them to 16 separate units of service.

Cost data are summarized for 37 community-based service delivery units (CDU) operated by 11 different providers of substance abuse treatment. The sample is not large enough, nor was it selected in a manner to be "representative." We believe that these are generally "better-than-average" public-sector providers. These community based organizations (CBOs) were corporately affiliated with treatment units that were funded by the Center on Substance Abuse Treatment (CSAT) to demonstrate promising approaches to treatment. Indeed, this affiliation is the sole reason that cost data were obtained for these treatment units. Therefore, they are likely to be a somewhat atypical sample in that their parent organizations were willing and able to

successfully compete for the CSAT awards. We might expect these providers to be "better than average," if not in the quality of services, then in their ability to write successful grants.

3. RESULTS

The primary product of the SATCAAT is detailed information for a particular substance abuse treatment service delivery unit (SDU), about the units of service delivered and unit costs of those services. Underlying these estimates is quite detailed information about the inputs and expenditures of treatment units that can also be of value in profiling treatment approaches and providers. We have developed examples of such descriptive tabulations for the sample of providers used to demonstrate the SATCAAT.

Unit cost data are a distinct improvement over the more traditional "slot cost" data that has been used in substance abuse treatment. The units of service and cost examined by the SATCAAT are directly analogous to units of service needed for fee-for-service reimbursement systems, e.g., an intake assessment; a physical examination; an individual counseling session; a night of housing, etc. These units of service and unit cost rates can be summed together for a particular client's course of treatment to yield the cost of the treatment episode, or an average treatment episode can be constructed for some period.

In contrast, a treatment "slot" is the capability (space plus staff) to treat one client (or a succession of clients rotating through the slot) for a year. In its most basic form slot cost is the expense of providing a "client year" of care, recognizing that several clients will be treated in a slot due to client turnover. Basic slot cost estimates tell little about the cost of the components of treatment.

Thus, unit cost estimates for substance abuse treatment will provide significantly more information about the cost of treatment and can have important implications for economic analyses. While the traditional "slot cost" estimates have provided a useful approximation up to this point, they actually provide biased estimates of the treatment costs that are quite important in economic analysis. i.e., how costs vary in relation to duration of treatment.

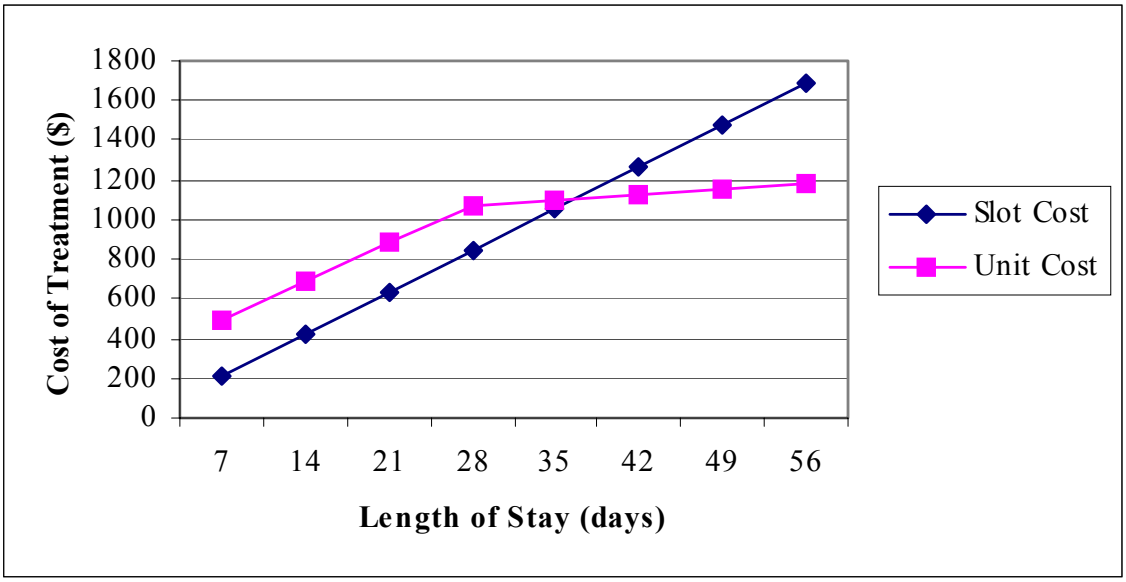
Unit cost data combined with data on client service utilization patterns allow analysts to examine the pattern of service/resource use and costs across the treatment episode. This analysis makes it evident that an important fraction of treatment episode costs (up to 20%) consist of intake assessment costs (initial assessment, physical examination and/or comprehensive psychosocial assessment). Moreover, many providers give more intensive services initially, and then reduce the intensity of care over time as the client progresses. A "slot cost" analysis might

paint a picture of constant costs per day across the entire treatment episode by virtue of prorating the intake and more intensive services across the entire duration of treatment.

Therefore, a slot cost estimate yields biased estimates for most clients: artificially low cost estimates are produced for clients with a relatively short length of stay, and artificially high cost estimates are produced for clients with a longer length of stay. Unit cost and slot cost per day methods only give the same (correct) cost estimate for a very few clients with roughly average length of stay. This is demonstrated with the graph in Exhibit ES-1 for one of the providers contained in our sample that operates a 2 month/two-stage program. The first month (including a one week transition) is intensive outpatient, with the second month being low intensity outpatient care.

The curves plot the total treatment episode cost (on the vertical axis) by the treatment episode length of stay. The straight line represents the slot cost relationship, while the broken line represents the unit cost relationship with different stages/intensities of treatment. Note that in this actual example unit costs are greater than the slot cost estimate up to about 35 days (when they are roughly equal) and for greater lengths of stay the unit cost estimate is increasingly lower than the slot cost estimate.

EXHIBIT ES-1
COMPARISON OF COSTS OF TREATMENT FOR
UNIT COST AND SLOT COST METHODS



4. IMPLICATIONS FOR RESEARCH, POLICY AND PRACTICE

There is a critical need for high quality data on the costs of substance abuse treatment. This comes primarily from the need for purchasers of these services to feel that they are getting good value for their expenditures—a need shared with general health and, indeed, across all sectors of the economy. Of course "value" is actually the comparison of effectiveness to costs, and cost data without information about outcomes are of limited use. Fortunately, our basis of knowledge about treatment effectiveness is improving. Still, resources for substance abuse treatment are limited, and the more we know about treatment and its costs, the better providers will be able to produce care efficiently and effectively.

The substance abuse treatment field will increasingly need to perform cost effectiveness and cost benefit analyses of different approaches to treatment. This will require treatment evaluations to compile data about outcomes, quality/intensity of care and the cost of services in order to do a complete and thorough analysis. The SATCAAT can provide a critical part of the data requirements.

It should be emphasized that cost data in the absence of further information about standards for treatment or outcomes of clients are of limited utility. While cost data for different providers can be compared, it actually requires critical assumptions about quality and effectiveness to make it meaningful. And by similar logic, quality and outcome data are much more meaningful when accompanied with cost data. It is recommended that evaluation studies routinely acquire and compile unit cost data as an integral part of the process evaluation, if not as part of a cost effectiveness or cost benefit analysis.

From the analysis perspective, the work done with the SATCAAT to date demonstrates that this tool can successfully obtain sufficient quantity and quality of information to develop unit cost estimates. This means that it is possible to define meaningful components of service; that providers can describe and measure inputs into these services; that the delivery of these services can be measured; and that the costs of a service delivery unit can be allocated across those respective components. While the SATCAAT defines preferred methods and/or data to produce the estimates, the work done to date also demonstrates that data are maintained in quite different ways across providers, and that a certain amount of flexibility will need to be exercised.

Policy makers clearly will benefit from improved cost data. Our nation is spending in excess of $11 billion on substance abuse treatment per year (Mark et al., 2000), and high quality information is needed about what is purchased. The primary purpose of cost data from a policy perspective is to demonstrate accountability as well as efficiency. The SATCAAT and systems

like it enable purchasers of treatment to identify low and high cost providers of particular types of services, and—just as important—to measure the intensity of services being delivered. Because the SATCAAT defines and measures units of service, it is possible to make more meaningful comparisons across providers and to identify variations in costs that relate to service intensity (measured by the units of service delivered per client).

Practitioners will ultimately benefit from improved data on the cost of treatment in their ability to define the components and costs of care when they negotiate reimbursement. In theory, reimbursement rates that do not identify and specify the intensity of service are an invitation to purchasers to pay increasingly smaller amounts for care, as providers are pitted against each other in cost competitions. When there is an ability to define and measure the units of service, this should improve the ability of providers to negotiate reimbursement rates that do not undermine the nature of care being delivered.

I. INTRODUCTION

I. INTRODUCTION

Accurate data about the cost of substance abuse treatment are becoming increasingly important as financing methods change. While the publicly supported treatment system was long financed by grant-like funding, this is rapidly changing. New methods for reimbursing treatment require providers to know the cost of particular components of service in order to negotiate meaningful reimbursement rates and manage their finances more accurately and actively than in the past.

This report introduces the reader to a cost estimation tool developed under the sponsorship of the Center for Substance Abuse Treatment (CSAT): the Substance Abuse Treatment Cost Allocation and Analysis Template (SATCAAT). The tool is described, and results are presented for a sample of substance abuse treatment providers that were analyzed with the SATCAAT.

1. OVERVIEW OF RELEVANT RESEARCH

The cost of substance abuse treatment is becoming increasing important. These costs need to be measured accurately in order for them to be managed well, but also in order for meaningful comparisons to be made of costs and benefits of treatment. The field is being pushed to spend the limited resources available for treatment efficiently. Purchasers of treatment such as State substance abuse authorities and managed care plans are responsible for spending resources efficiently; however, the data they collect about costs and decisions they make about funding rarely come into the public domain.

Analysts are interested in good cost data primarily to analyze the cost-effectiveness and cost-benefits of treatment. Researchers have published a limited number of studies that focus entirely or partially on the cost of treatment in recent years. Some of these papers have a focus on the methodology of cost estimation (Anderson et al., 1998; French & McGeary, 1998; Yates, 1999), others on the cost of specific providers or types of care (Cisler et al., 1998; French & McGeary, 1998; French et al., 1999), while others examine costs from the perspective of insurance plans (Goodman et al., 1992, 1996, 1998; Schoenbaum et al., 1998). Still others undertake to compare the costs and economic benefits of alternative approaches to substance abuse treatment, (Avants et al., 2000; Weisner et al., 2000).

Much of the analysis of publicly financed treatment has used the "slot cost" method to estimate costs (French & McGeary, 1998; French et al., 1999; McKusick et al., 1998). The slot cost is the expense of one person-year equivalent of treatment. As few clients stay in treatment for a year, a single treatment slot actually provides care to multiple individuals in a year (the number depending on the average length of stay at that provider). This method was the original approach taken to reimburse treatment for drug and alcohol disorders and is still use at this time.

The National Drug Control Strategy budget documents still measure the spending power of Federal funding in treatment slot equivalents (Office of National Drug Control Policy, 2001).

However, quite different reimbursement approaches (necessitating quite different types of cost data) are used in the health field. As the substance abuse field is moving ever closer to the general health field, it is useful to be familiar with those methods. Fee-for-service reimbursement requires health providers and payers to define units of care/service and then to negotiate payment rates for those units. This is the most basic approach to reimbursement, and unit cost data are a central component in the other systems.

Ambulatory care still heavily depends on fee-for-service reimbursement, and units of care are defined in the Common Procedural Terminology (CPT) system, with reimbursement rates for specific CPT units of service established by the various payers and plans across the nation most frequently using the resource-based relative value scale (RB-RVS) approach. Hospital care is paid for in a number of different ways, although most of them involve fee-for-service (or at least unit cost) data in their calculation of rates. The Diagnostic Related Group (DRG) system is relatively common, and involves identifying a set of mutually exclusive and exhaustive diagnoses/procedures with a fixed reimbursement rate paid for a patient[1] with that DRG code. The DRG system was developed to provide hospitals with incentives to reduce the cost of treating patients. DRG rates were developed based on the charges for treating patients, using very detailed units of service and unit charge values. ("Charges" and "costs" are closely related although different concepts; the distinction is beyond our scope in this document .)

The "case rate" is another reimbursement system in the health insurance world (and there are many variants). A case rate is generally paid to a health practitioner to provide/manage the medical care require by a patient with a particular health disorder. The case rate can cover the costs of inpatient as well as ambulatory care and medications. Initial development of case rate values is again dependent on constructing accurate patterns of care for diagnoses and on defining units of services received and the costs of the respective units.

Insurance premiums also depend on unit cost data (among other kinds of data). When insurance companies develop estimates of the cost of covering substance abuse treatment, they build them out of data about the probability that a beneficiary will need substance abuse treatment, data about the type and amount(s) of treatment, and the unit costs of those treatment services.

The bottom line is that unit cost data are fundamental information in virtually any reimbursement system. As alternative approaches to the slot cost methods are applied to

[1] While "client" is the preferred term for a recipient of substance abuse treatment, "patient" is preferred in general health and in discussions of reimbursement mechanisms for general health.

reimbursing publicly subsidized substance abuse treatment, there will be greater need for unit cost data.

2. PURPOSE AND PARAMETERS OF THE PRESENT ANALYSIS

This report describes the general approach of the SATCAAT model and presents unit cost data on a sample of publicly funded substance abuse providers. This paper is intended to familiarize the reader with this method and with some of the data required to develop unit cost estimates, and that can be produced once the data are collected and analyzed.

This analysis uses a data set compiled through CSAT evaluations. Cost analyses using SATCAAT were performed for providers participating in several particular service demonstrations. Detailed data were collected for the demonstration units and "sibling" service delivery units that operated in close coordination. This analysis is capitalizing on the data for "sibling" treatment units. Other analyses have already reported on the cost of the demonstration programs. The purpose and value of the present analysis is that it reports on the composition and costs of relatively typical service delivery units, instead of the CSAT-funded demonstration units that were providing more intensive approaches to treatment than is common. While it is not possible to consider this sample of treatment units as "representative," primarily due to the small number, we believe the data from them meaningfully demonstrates the approach and products from the SATCAAT unit cost methodology. To our knowledge, this is a unique data set. Other data sets with cost data either obtain less data about units of service, or else have even fewer observations (e.g., Anderson et al., 1998; Cisler et al., 2000; French & McGeary, 1996; Weisner et al., 2000).

This database allows us to analyze four different types of providers: detoxification units (non-hospital); residential treatment; intensive outpatient providers; and standard outpatient care.

3. ORGANIZATION OF THE REPORT

This chapter presents the main objective of the present analysis and a brief overview of prior research related to this topic. Chapter II presents a description of the data collection protocol that was used to compile and prepare the data for analysis. This includes an overview of the sample of treatment units that was available for this analysis. Chapter III contains the main empirical findings from our analysis, and conclusions and implications are discussed in Chapter IV.

II. METHODS

II. METHODS

The purpose of this chapter is to describe the methodology used to analyze the costs of substance abuse treatment. We provide a description of the approach taken and the tool used to collect the cost data on treatment, and then we briefly describe the sample of providers available for this analysis.

1. MEASURING THE COST OF SUBSTANCE ABUSE TREATMENT SERVICES

In order to provide a systematic cost accounting method and cost measurement method that can be used for management operations as well as treatment services evaluation, The Program Evaluation Branch (PEB) of the Center for Substance Abuse Treatment (CSAT) developed and employs in its evaluation activities a systematic cost methodology entitled the Substance Abuse Treatment Cost Allocation and Analysis Template (SATCAAT). The methodology was developed for CSAT by accounting experts at Capital Consulting Corporation in consultation with a NIDA/SAMHSA-convened expert panel of substance abuse treatment and cost analysts. The methodology uses "generally accepted accounting principles," (or GAAP; see e.g., Delaney et al., 2000) and was pilot tested to assess the functionality of the unit costs and units of measure in more than 100 substance abuse treatment service delivery units.

When the development of SATCAAT was initiated, there was no cost system that could develop unit cost estimates for substance abuse treatment providers. Several other systems of cost estimation (Anderson et al., 1998; French & McGeary, 1998; Yates; 1999) were developed at roughly the same time as SATCAAT. These systems have somewhat different designs and strengths. There has been some interest at CSAT and in the field in performing head to head comparisons of these instruments, although the opportunity and funding for such an effort has not yet been realized.

The SATCAAT offers CSAT and the substance abuse treatment field a model for performing cost analyses that are directly applicable to substance abuse treatment and related services. Because the approach requires knowledge of cost accounting as well as the systematic application of the methodology, the SATCAAT, in its current format, necessitates data collection and analysis by individuals trained in its use. For better results (accuracy), this model should have at least one full year of cost data where the treatment services have been in place for at least two years. This is important since the first year of operations cost data typically reflect start-up costs atypical of normal operations. Developmental efforts supported by CSAT have attempted to simplify the system, provide operational tools that will minimize the need for cost accounting knowledge, and lessen the experience required to use the methodology accurately. CSAT hopes to develop a public domain data collection package that could be used by treatment provider staff or by evaluators, as well as by professional cost analysts.

This methodology has been piloted to assess the costs for numerous substance abuse treatment service delivery units (SDUs) across the nation. The vast majority of these have been CSAT grantees, cutting across many different types of SDUs.[2] Types of SDUs analyzed have included residential (non-hospital) treatment, day treatment programs, outpatient programs, hospital-based detoxification and rehabilitation programs, and methadone maintenance programs (Capital Consulting Corporation, 1994; Lewin-VHI, Inc., 1995). The methodology has been applied to "systems," such as Target Cities projects, and has proven amenable to analysis of centralized system components such as central intake units.

The initial step in the approach of the SATCAAT is to acquire comprehensive data about expenditures for substance abuse service providers for the service delivery unit, classified under the general categories of expenses (called "cost centers" in accounting terminology), which are identified in Exhibit II-1 (Capital Consulting Corporation, 1998). This process is termed the "general ledger reconciliation." Under each category/cost center, there may be numerous items. For example, administration costs include the services of various types of personnel, equipment rental/service/supplies, various professional services (e.g., legal, bookkeeping), telephone, insurance, and other. Personnel costs include direct salaries, fringe benefits and payroll taxes.

As the goal of the analysis is to reflect the total cost of the services being delivered (the opportunity cost), the SATCAAT also requires collection of data about donated and volunteered resources such as facilities and staff. These donated resources must be recognized at "market value" to accurately reflect all costs if another provider wanted to attempt to replicate the service delivery unit. Market value generally means the cost of renting or purchasing the services in the local economy. The valuation approach of SATCAAT differs from several cost models (e.g., Anderson et al., 1998; French & Geary, 1997) in valuation of land, structures and other property already owned by a provider. SATCAAT uses standard accounting principles to value these based on original cost (valued at market) and depreciation. This "accounting" value tends to be lower than the models that cost property at current market value, depending on a variety of factors. As we see later, this portion of total costs tends to be much less than 10 percent for substance abuse treatment providers.

[2] The unit of analysis for the administrative component was the SDU, defined by CSAT as a single site offering a single level of care. The classification of *level of care* is based on three parameters: facility type (e.g., hospital, etc.); intensity of care (e.g., 24-hour, etc.); and type of service (e.g., outpatient, etc.). An SDU could be a stand-alone treatment provider or it could be one component of a multitiered treatment organization. For example, a large county mental health agency may be the *organization* within which the SDU is located. The organization may have multiple substance abuse treatment components, such as a county hospital and a county (ambulatory) mental health center. The county hospital may have multiple SDUs, such as an inpatient detoxification service, an outpatient counseling service, and a hospital satellite center providing transitional care. In summary, the SDU provided NTIES evaluators with a stable, uniform level of comparison for examining service delivery issues.

EXHIBIT II-1
MAJOR TYPES OF EXPENSES OR COST CENTERS
OF SUBSTANCE ABUSE PROGRAMS

Administration	Psychiatrist
Facility and grounds	Psychologist
Dietary	Social worker
Laundry	Certified addiction counselor
Housekeeping	Vocational therapist
Medical care	Recreational therapist
Laboratory	Other therapist
Depreciation, rent & interest	

Source: Capital Consulting Corporation, 1994

The ultimate product of the SATCAAT is unit cost calculations for defined types of services that comprise virtually all, or at least the major types, of activities that a substance abuse program provides. It is not necessary to identify or estimate the cost for every type of service delivered by an SDU, as this may run into dozens of services. At the beginning of SATCAAT development, nearly 100 discrete potential services were identified. However, such a number is unworkable, and, indeed, unnecessary. This initial list was reduced and collapsed into a core set of 13 relatively distinct services with the assistance of expert panels. Note that the SATCAAT is quite flexible and readily permits adding, taking away and changing services. The analyst can and should choose or define the service types to be analyzed, depending on the type of provider being studied.

The services studied for SDUs in this analysis are identified and defined in Exhibit II-2. Note that each "type" of service may actually encompass several closely related services, such as individual counseling, and medical/diagnostic services. Individual counseling would include counseling by different types of practitioners (e.g., counselors, social workers, psychologists) for different needs (e.g., substance abuse, physical/sexual abuse, family counseling). Similarly, medical/diagnostic service covers a very broad range of services such as alcohol and drug testing, tests for TB or hepatitis, prenatal services. In a general medical setting, such tests and procedures would be recorded and billed as distinct units of services. However in substance abuse clinics, there is remarkable variability across providers in what medical services/tests are done on site as opposed to by referral. Therefore "bundling" is used in SATCAAT to differentiate these costs from psychosocial services.

EXHIBIT II-2
DEFINITIONS OF UNITS OF SERVICE IN THE SATCAAT

Service Type	UNIT OF MEASUREMENT	DEFINITION
Initial assessment	Assessment	Pre-admittance interview/screening, obtaining background, eligibility and financial information
Medical examination	Exam	Initial medical exam, including medical history, vital signs, and laboratory testing
Psychosocial evaluation	Evaluation	More extensive evaluation typically performed by mental health professional focusing on social history and history of abuse and psychological testing
Individual counseling	Hour	One-on-one meeting with counselor; review treatment plan progress and discuss client specific problems
Group counseling	Session hours	Facilitated sessions presented to multiple clients with lectures and discussion focusing on substance abuse and mental health issues
HIV counseling and Testing	Client, client/day	Counseling on, and testing for, HIV/AIDS
Medical/diagnostic services	Client, client/day	Medical services such as urinalysis, other laboratory services, medical supplies and medicines (including methadone), and medical staff labor costs
Housing	Day	Cost to house clients, including dietary, housekeeping, utilities, laundry, and maintenance
Records management	Client, client/day	Documentation of treatment services received by clients
Case management/ networking/outreach	Client, hours/client, client/day	Chart review, collateral contact, treatment plan writing, and clinical staff coordinating living arrangements, legal advocacy, court attendance, and providing street outreach
Child care	Children, child hour or day	Provision of child care services to children of treatment clients while the clients receive treatment
Client transportation	Client, client/day	Transportation for medical care, educational trips, and other needs
Staff education	Client, client/day	Includes cost of staff training and education
Client education	Client, client/day	GED preparation, college course work, vocational training, and employment skills training
After/continuing care	Client	Follow-up contacts with clients after discharge
Project evaluation	Client	Activities conducted by consultants or staff related to compilation of statistics, tracking client outcomes, outcome analysis, etc.

Also, for each type of service, a unit of service measurement is defined, primarily in order to allow costing per unit of service. The most typical unit of service is the number of

clients treated by the provider over the time period (which we augment by calculating a cost per client day), although other important units are the number of individual and group counseling hours delivered. Also, data are usually collected about the number of clinical staff hours per activity(such as case management and/or client record keeping). This means it is possible to calculate more refined units of service than the cost per client or cost per client day. Unit cost estimates can be developed for an hour of case management or client education.

The core of the SATCAAT is comprised of allocation rules for translating expenses into unit costs for each type of service. The SATCAAT uses the standard "step down" accounting procedure to perform allocation of expenses to units of service. This method is briefly explained below. Technical treatment of this topic can be found in accounting texts and manuals (e.g., Delaney et al., 2000). The step down method imposes an order by which costs are allocated from very general cost centers to increasingly specific cost centers and, ultimately, to types of services. Exhibit II-3 lists the cost centers in the order or hierarchy established for purposes of the SATCAAT. This is the order in which cost allocations are made, and the exhibit also defines the type of data that serve as the basis for allocating those respective costs to other cost centers and service types.

Initially, costs for depreciation, rent and interest (space costs) are allocated across all other cost centers and units of service. This allocation is based on the square footage of the space being used for each of the other cost centers and service types (use of space is ascertained when the cost analyst goes onsite). Some of the space is dedicated to administration, housekeeping, office space for respective types of staff, and space for group counseling sessions, for example, and each is apportioned a share of costs based on share of space allocation. At this point, the general ledger depreciation, rent and interest costs have been entirely allocated to other cost centers and units of service, and their respective costs have been adjusted up. The same process is then repeated for administration expenses, which are allocated to all "lower" cost centers and service types based on their "accumulated costs ." This process proceeds/repeats until all values from cost centers have been allocated to the units of service.

Once total costs by type of service are summed, this is divided by the number of units of that type of service (defined in Exhibit II-2) that have been delivered during the period being studied. Thus, total costs for performing initial assessments is divided by the number of initial assessments performed during that period. The total costs for individual and group counseling sessions are likewise divided by the number of hours and/or sessions to generate the unit cost of each type of service. Service units such as case management can be allocated on a per client basis or per unit of time a client is enrolled.

EXHIBIT II-3

COST CENTERS FOR UNIT COST ANALYSIS AND BASIS FOR ALLOCATION TO UNITS OF SERVICE

Cost Center	Basis for Allocation
Depreciation, rent & interest	Square footage for respective cost centers and units of service
Administration	Accumulated costs
Housekeeping	Square footage for respective cost centers and units of service
Dietary	Housing
Facilities and grounds maintenance	Square footage for respective cost centers and units of service
Laundry	Housing
Client transportation	Client transportation
Staff education	Staff education
Client education	Client education
Medical care	Medical examinations, medical/diagnostic services, HIV testing
Laboratory	Medical examinations, medical/diagnostic services, HIV testing
Psychiatrist	Hours for respective units of service
Psychologist	Hours for respective units of service
Certified addiction counselors	Hours for respective units of service
Vocational therapist	Hours for respective units of service
Social worker	Hours for respective units of service
Recreational therapist	Hours for respective units of service
Child care services	Child care services
Other therapists	Hours for respective units of service
Outreach workers	Outreach services
Residential technicians	Hours for respective units of service
Other specified staff (e.g., MD, nurse)	Hours for respective units of service
Dispensing	Medical/diagnostic services
Medications (methadone, Orlaam)	Medical/diagnostic services

The analyses undertaken in this report attempt to demonstrate the application of SATCAAT to understanding the structure of costs for substance abuse treatment. The strength of unit cost estimates (and of SATCAAT data) is that they can be manipulated in a number of ways useful for different purposes. The most rudimentary value that can be generated is the average cost per client treated. This is then broken out into the cost per client for the respective units of service, and this, in turn, can be divided into the cost per unit of service. The compilation of data on units of service per client and per unit of time makes it possible to develop cost profiles for prototypical treatment profiles (short, medium, long stays of defined duration) and even for specific clients.

Client cost estimates can be based on "average," or typical, service utilization profiles applied to their specific duration of treatment, or to the client's actual utilization of services as recorded in treatment records or in billing/claims files. For analytic purposes, it is best to collect data about utilization by particular clients of units of service in order to develop the most accurate picture of service receipt as well as treatment cost.

2. THE DATA

The data for this analysis was collected for 37 SDUs in organizations that held demonstration grants from the Center for Substance Abuse Treatment. The data were collected on-site by trained cost accountants using the SATCAAT data collection forms and protocols.

The SDUs reported on in this set of analyses were "brothers/sisters" to SDUs participating in the CSAT Residential Women and Children (RWC) demonstration, the Pregnant/Postpartum Women and Children (PPW) demonstration or the HIV Outreach demonstration. However, it should be emphasized that the SDUs reported on were not themselves supported by CSAT demonstration funds. The unit cost data were acquired because the cost accountants needed to have the data on other SDUs in order to develop cost estimates for the CSAT demonstration SDUs that accurately allocated shared costs between demonstration and non-demonstration units. For this analysis, we have primarily used 1997 data, although, for some providers, 1996 was the most recent year available.

III. RESULTS

III. RESULTS

The SATCAAT compiles, organizes and analyzes a significant amount of financial and operational information about a provider and its service delivery units (SDUs). The underlying descriptive data and the unit cost data have utility in their own right, as much as anything to characterize the nature of expenses, the staffing approach and the treatment intensity. One of the opportunities in collecting this information will be to compile representative data about providers to which individual treatment units may wish to compare themselves. Certainly, the unit cost data can be used in this manner—for an SDU to identify how their costs per unit of service compare to similar providers. To understand the differences, it is often useful to look at the underlying patterns of expenses to determine if certain cost components are divergent. First, we review the basic patterns of expenses for SDUs of different types—compiling average profiles of types of expenses, staffing patterns and other characteristics of the SDUs in the sample available for analysis. Average costs and unit costs are presented. The final section compares the nature of data obtained from the unit cost analysis with slot cost analysis and discusses the analytical implications of this difference.

1. CHARACTERISTICS OF THE SAMPLE

The main characteristics of the sample of providers are found in Exhibit III-1. Only limited numbers of each type of service delivery unit were available, thus the statistics in this and following exhibits should not necessarily be considered broadly representative. The values in Exhibit III-1 are averages across the SDUs of each type. Without going into the specific numbers, it can be stated that the average values for each type of SDU is within reasonable range of averages for similar units obtained from the national survey of substance abuse treatment providers, the Uniform Facility Data Set (Office of Applied Studies, 1999). Detoxification units have very short average stays at higher costs per day, while standard outpatient providers have longer average stays at much lower costs per day enrolled. The values for residential and intensive outpatient providers are between the detox and outpatient SDUs in terms of cost per client day of care and average daily census. There is significant variability across the providers within each modality/level of care in their planned/desired length of stay, as well as in actual lengths of stay and in costs per client and per client day of care. This mirrors the type of differences that currently exist in the nation's treatment delivery system. Future analyses will certainly want to examine subdivisions each of the major levels of care to understand the nature and intensity of services as well as unit costs and cost per client.

EXHIBIT III-1

CHARACTERISTICS OF THE SDUS IN THE SAMPLE

	Freestanding Detox	Residential	Intensive Outpatient	Standard Outpatient
Number of SDUs	6	15	9	7
Annual clients	871	149	224	312
Average daily census	6.7	24.7	17.2	72
Length of stay	5.4 days	91.5 days	52.5 days	88 days
Total cost/client	$1,046	$6,043	$1,735	$1,336
Total cost/client day	$194 / day	$66 / day	$33 / day	$15 / day
Annual Total Cost	$911,066	$900,407	$388,640	$416,832

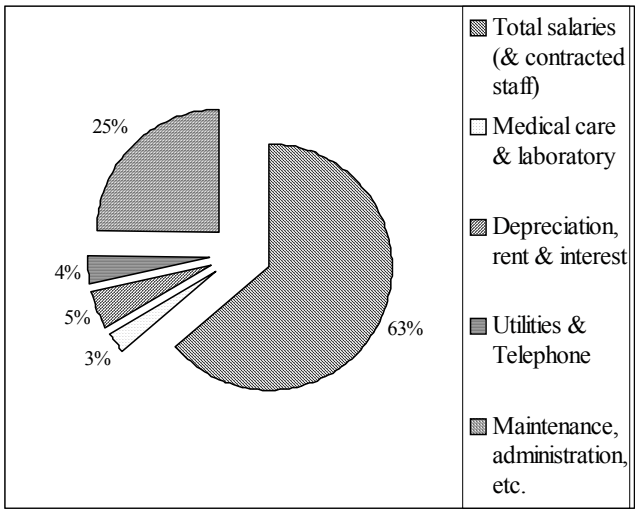
Source: Cost data collected by Capital Consulting Corporation; analysis by The Lewin Group.

2. TYPES OF EXPENSES OF SUBSTANCE ABUSE TREATMENT PROVIDERS

Substance abuse providers are relatively unremarkable in terms of their expenses (Exhibit III-2). Almost two-thirds of the costs of this sample of providers was for wages and salaries (or for contracted staff). Depreciation, rent and interest (for space-related costs) only makes up another 5 percent of total costs, although utilities (electricity, heat and telephone) takes up another 4 percent. A variety of maintenance and administrative expenses make up more than 20 percent of total costs to pay for purchased supplies and services.

EXHIBIT III-2

DISTRIBUTION OF COSTS BY TYPE OF EXPENSE, TOTAL SAMPLE



Two other items of greater interest to substance abuse treatment are medical care and laboratory expenses (3%) and employee training expenses (less than 0.5%; included in "maintenance, etc." for exposition). Both of these are considered increasingly important to the quality of substance abuse treatment. Medical/laboratory expenses includes the cost of blood alcohol and drug urinalysis tests, as well as any specific medical services provided or paid for on behalf of clients. The fact that medical and diagnostic costs, are a very small fraction of total costs reflects the fact that most health care appears to be obtained from other health providers rather than the substance abuse clinics, and that any testing being done by these providers entails little cost.

These expense distributions were also examined for the different types of providers (Exhibit III-3). However, these values were not developed on an SDU level because many SDUs are co-located and actually share a number of resources. We have segregated the providers into those that only deliver residential and outpatient services, respectively, and a third group that has outpatient and residential SDUs co-located. As might be expected, outpatient providers have a larger proportion of expenses in staff, and smaller shares in maintenance, housekeeping and related costs. The providers with mixed services are between the other two on these two measures.

EXHIBIT III-3

DISTRIBUTION OF COSTS BY TYPE OF EXPENSE, BY SDU LEVEL OF CARE

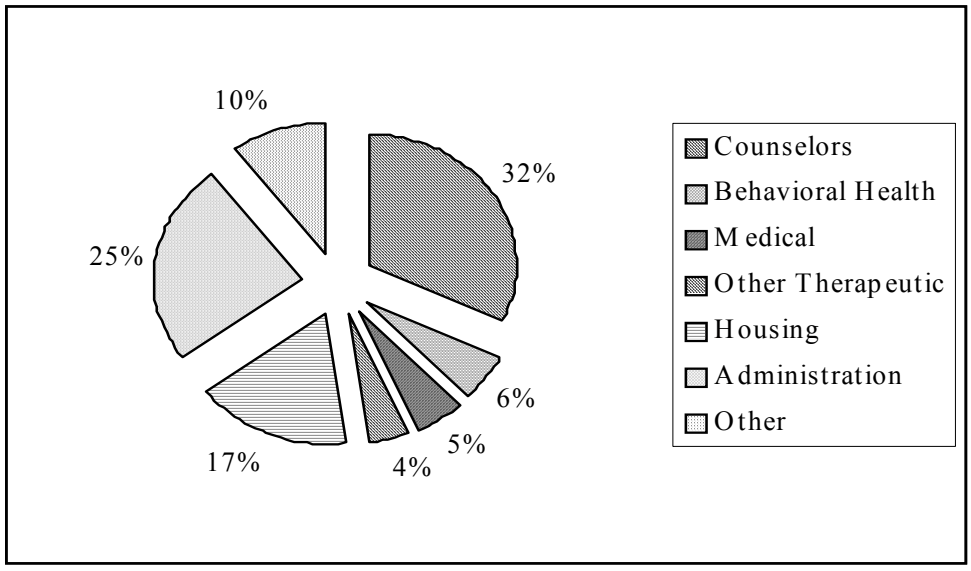
	Residential	Outpatient	Mixed Types
Total salaries (& contracted staff)	60.9%	67.3%	66.1%
Depreciation, rent & interest	4.1%	5.3%	6.7%
Medical care & laboratory	2.0%	3.9%	2.6%
Administration expense	15.1%	11.6%	9.8%
Maintenance, housekeeping, diet, laundry (x utilities)	11.5%	2.8%	7.1%
Staff education	0.2%	0.3%	0.5%
Other	3.2%	4.6%	3.5%
Utilities & telephone	3.1%	4.4%	3.8%
Total	100.0%	100.0%	100.0%

3. STAFFING PATTERNS OF SUBSTANCE ABUSE TREATMENT PROVIDERS

Because staffing constitutes the single largest share of expenses, these costs are examined in more detail in Exhibits III-4 and III-5. The single largest type of staff are certified addictions counselors (about a third of staff expenditures), followed closely by administrative staff at about 25 percent of staff expenses. Another 6 percent was spent on "behavioral health therapeutic" staff (psychiatrists, psychologists, and/or social workers), but another 27 percent was for support staff ("housing technicians" and "other"). Medical staff (MDs, nurses, PAs and pharmacists) took about 5 percent of staff spending. About two-thirds of providers had some type of medical staff availability. Up to 60 percent of outpatient staff spending was on therapeutic staff, compared to about 30 to 35 percent in residential and mixed providers. These data (and these providers) indicate that staffing of residential setting requires a material proportion of non-clinical staff.

EXHIBIT III-4

DISTRIBUTION OF STAFFING COSTS BY TYPE OF PERSONNEL, TOTAL SAMPLE



It appears that residential providers are less likely than outpatient providers to spend much of their budget on behavioral health professionals such as psychologists, social workers and psychiatrists on staff (about 3% of salaries). Outpatient providers spent about 15 percent of salaries on these therapists (Exhibit III-5). The "mixed providers" were roughly halfway between the other two types of SDUs. Actually, about half of the residential, outpatient and mixed providers had behavioral health therapists on staff; however, several of the outpatient providers spent as much (or more) on behavioral health staff as on counselors, which raised the average for the group substantially. The residential and mixed providers in this sample spent only small amounts, if any at all, on behavioral health staff.

Availability of behavioral health staff is increasingly important given the attention being given to mental disorders among substance abuse clients. The fact that about half of these providers had such staff available should be a good sign, although that may be an artifact of the sample.

EXHIBIT III-5
DISTRIBUTION OF STAFFING COSTS BY TYPE OF PERSONNEL, BY SDU LEVEL OF CARE

	Residential	Outpatient	Mixed
Counselors	31.0%	44.7%	20.8%
Psychologist	1.1%	5.9%	0.3%
Psychiatrist	1.1%	2.6%	1.3%
Social worker	0.8%	6.7%	1.6%
Medical	2.9%	6.9%	7.9%
Outreach	0.0%	0.0%	2.0%
Other therapist	2.5%	3.6%	6.5%
Housing	24.1%	1.9%	18.9%
Other	11.0%	5.1%	14.2%
Administrative	25.4%	22.7%	26.4%
Total	100.0%	100.0%	100.0%

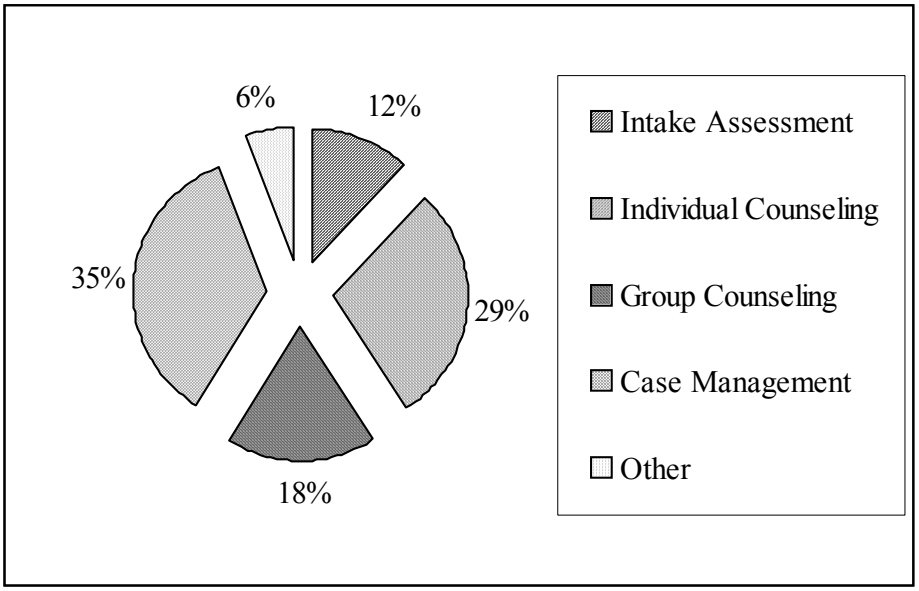
The important point to be made here is that the SATCAAT explicitly seeks and uses information about the professions of clinical/therapeutic staff. This can reveal further information about the potential of substance abuse providers at least to recognize and refer, if not treat, comorbid mental disorders.

4. USE OF STAFF IN DELIVERING SERVICES

Further insight can be gained into treatment provider operations by examining how their clinical staff uses time. Exhibit III-6 displays how the hours of counselors, psychologists, social workers and psychiatrists are distributed across the respective major clinical activities. These practitioner types have been summed for presentation, and we have also summed across the respective modalities.

One major conclusion immediately comes out of this data. Nearly 40 percent of clinician time is used on case management, records keeping, networking and "other" activities (hours spent on each of these was measured, but they have been summed together for presentation and discussion). These activities may not be thought of as the primary activities of clinical staff, yet they require a significant proportion of their available time. (There may be ways to perform these services more efficiently that would somewhat reduce these time requirements.) Still, reimbursement systems and rates need to be developed that recognize these additional time requirements. This can be done in one of two ways: create, measure and reimburse units of service for case management, etc.; or load the cost of these activities back on to the costs/reimbursement rates for the reimbursable activities (e.g., intake assessments, individual and group counseling).

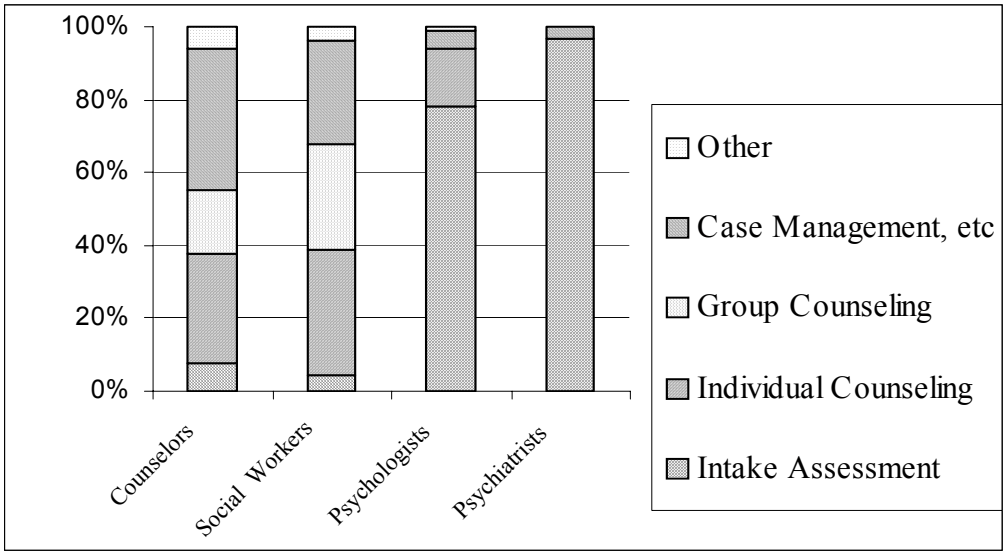
EXHIBIT III-6
DISTRIBUTION OF CLINICAL STAFF TIME BY CLINICAL SERVICES



Another finding central to the advantage of unit cost systems over slot cost systems is that an appreciable amount of staff time goes into client intake assessments. This effort is concentrated by definition at the beginning of a treatment episode, with obvious implications for the time profile of costs across a treatment episode.

When we examine the utilization of different types of clinical staff, several other findings appear (Exhibit III-7). Counselors and social workers have similar responsibilities in substance abuse treatment clinics. They both perform the complete range of clinical functions, and in relatively similar proportions. This suggests that, in some measure, they may be interchangeable, although recall from Exhibits III-4 and III-5 that many more counselors are used than social workers. Psychologists and psychiatrists are used almost exclusively for clinical assessments.

EXHIBIT III-7
DISTRIBUTION OF CLINICAL STAFF TIME BY CLINICAL SERVICES



5. UNIT COSTS OF SERVICES

The primary output of the SATCAAT is estimates of the unit costs of the components of treatment. The results of this analysis are found in Exhibit III-8. Estimates are again presented for four types of providers: standard outpatient, intensive outpatient, residential treatment and detoxification treatment.

The values presented are the averages of the values for each of the SDUs in the sample, including some situations where a provider did not deliver a particular type of service. This exhibit presents both the specific types of units for which unit cost estimates are developed by the SATCAAT, plus "bundled" costs for similar types of services. For example, during intake, most of the CSAT providers had three distinct steps: brief assessments; medical examinations; and comprehensive psychosocial assessments.

Note that there are clear differences across the respective levels of care, although there is little basis upon which to judge them at this point. As noted above, these data are from a non-representative, or convenience sample. This data should be viewed as a set of case studies that can yield qualitative, rather than precise quantitative, insights at this stage.

Further unit costs can be constructed directly from the data contained in the SATCAAT template. Of particular utility may be the unit cost for an hour of case management services (time spent by clinicians on this is recorded), which seems amenable to being allocated to individual clients across an episode of care.

EXHIBIT III-8
AVERAGE UNIT COSTS OF TREATMENT IN COMMUNITY-BASED ORGANIZATIONS, BY LEVEL OF CARE

Service Type	Unit of Cost Measurement	Freestanding Detox	Residential	Intensive Outpatient	Standard Outpatient
Treatment episode	Cost/client	$1,046	$6,043	$1,735	$1,336
Treatment episode	Cost/client day	$194	$66	$33	$15
Intake assessment	Cost/admission	$196	$370	$352	$109
Initial assessment	Cost/admission	$57	$80	$89	$21
Medical exam	Cost/admission	$109	$103	$70	$39
Psychosocial evaluation	Cost/admission	$31	$187	$194	$49
Counseling	Cost/client	$127	$1,229	$929	$374
Counseling	Cost/client day	$24	$13.50	$18	$5.50
Individual counseling	Cost/client hour	$36	$36	$47	$36
Group counseling	Cost/counseling session	$56	$63	$84	$67
Medical services	Cost/client	$260	$275	$72	$118
Medical/diagnostic	Cost/client day	$246	$243	$57	$100
HIV counseling and testing	Cost/client receiving service	$26	$163	$37	$74
Housing	Cost/client	$331	$2,574	N.A.	N.A.
Housing	Cost/client day	$46	$39	N.A.	N.A.
Case mgt./network./outreach	Cost/client	$47	$581	$227	$218
Case mgt./network./outreach	Cost/client day	$8.70	$6.35	$4.32	$2.48
Other	Cost/client	$91	$1,014	$161	$517
Other	Cost/client day	$16.90	$12.50	$2.90	$6.10
Records mgt.	Cost/client	$42	$273	$63	$210
Child care	Cost/client	$0	$87	$60	$189
Client transportation	Cost/client	$28	$153	$0	$52
Staff education	Cost/client	$10	$111	$40	$66
Client education	Cost/client	$0	$321	$3	$0
After/continuing care	Cost/client	$12	$70	$55	$0

A broader overview of the structure of costs can be gained from Exhibit III-9. Average treatment episode costs are allocated across the major components of treatment. Several features stand out from this table. First, intake services can or frequently do constitute a considerable proportion of treatment costs. In the 7 standard outpatient clinics these costs were $109 per client, or about 8.5 percent of episode costs. The more intensive levels of care spent much greater amounts on initial assessments, however—anywhere from $200 to $350 per client on average. Hidden behind these averages is the fact that a few providers spent up to three times as much (and others much less) per client on intake assessments.

Worthy of further note is the fact that a relatively modest proportion of costs is for counseling services—over half for intensive outpatient, about a third for standard outpatient, twenty percent for residential treatment and ten percent for detoxification.

EXHIBIT III-9

AVERAGE COMPONENT COSTS OF TREATMENT IN VARIOUS LEVELS OF CARE

Service Type	Freestanding Detox	Residential	Intensive Outpatient	Standard Outpatient
Treatment episode	$1,046	$6,043	$1,735	$1,336
Intake assessment	$196	$370	$352	$109
Counseling	$127	$1,229	$929	$374
Medical services	$260	$275	$72	$118
Housing	$331	$2,574	N.A.	N.A.
Case mgt./network. / outreach	$47	$581	$227	$218
Other	$91	$1,014	$161	$517

The primary point is that substance abuse clinics provide extensive services above and beyond traditional counseling services. All clinics perform case management services, which can be a meaningful proportion of the value of counseling services. Medical services of some types are often provided, although more often than not, these costs actually represent the cost of performing drug and alcohol testing with clients to monitor their progress. The "other" category can also capture a lot of services. For most types of provider, the major component of "other" is "records keeping" (Exhibit III-6). For residential care, other large costs are incurred for client education and for transportation services.

The major conclusion supported by this examination of the costs is that frequently a large or even majority share of treatment costs are for activities that generally are not thought of as mainstream clinical services. These services presumably are provided because the substance abuse treatment field has found that clients need these services if they are going to make productive use of treatment—although the burden should be on the field to justify this conclusion with outcome studies. Any reimbursement system that moves away from unbundled services toward units of service and unit costs will need to deal with these additional services, either to recognize and in some manner arrange to reimburse the additional required services, or else make the case not to pay for them.

6. UNIT OF SERVICE COSTS VERSUS SLOT COSTS

There is a further, and quite consequential advantage of unit service costs. Breaking costs up into their constituent components provides a much more accurate indication of the cost of treatment across a treatment episode than is typically gotten with the simpler alternative "slot cost" estimate. This is quite important for economic analyses that might compare the costs and benefits of longer treatment versus shorter treatment. *When costs occur* during a treatment episode, it has real implications.

The unit cost estimates make it obvious that at the beginning of treatment a significant amount of costs—as much as 20 percent of total episode costs—go into client intake assessments needed to develop treatment plans. The clinical literature addressing the "continuum of care" further points out that the intensity (and presumably cost) of treatment declines with client progress toward the end of a treatment episode or as a client prepares to move from one level of care to another.

The alternative, more basic approach to estimation of treatment costs generally does not look at when costs occur, but estimates the cost of providing a year of treatment (operating a treatment "slot" for one year). From this value, it is possible to calculate a simple average cost per day in treatment (the annual slot cost divided by 365 days of operation). However, the slot cost approach gives a distorted picture of the costs of delivering treatment of different durations in a single SDU: it underestimates the cost of short stays and overestimates the cost of long stays.

The magnitude of under- and overestimates can be of some consequence. Usually, clients with short stays are drop-outs, while those with longer stays tend to have better outcomes. Therefore the cost per poor outcome is minimized, while the cost per better outcome is exaggerated. This would be an unfortunate bias to interject into analyses at a time when there is a major effort to economize on treatment spending by reducing the duration of treatment.

In contrast, the unit cost system can give a more accurate indication of how costly treatment drop-outs are, and portray the more moderate costs of retaining clients for extended periods of time while improving their expected outcomes. This contrast between unit costs and slot costs can be graphically displayed with data from one of the outpatient treatment providers profiled by the analysts.

This provider operates an outpatient program with three integrated levels, beginning with intensive outpatient, proceeding to a transition week (similar to the first phase in intensity/cost) , and concluding with a low intensity phase. Provider A treated a total of 1,200 adult men and women during 1996 in their integrated intensive outpatient and regular outpatient programs. Their total operating costs of this program were $1.1 million. Intensity of services varied based on the frequency of counseling sessions, since that was the focus of these particular SDUs. Medical/diagnostic services were provided primarily in the form of urine tests. Each new client received an intake assessment, consisting of an initial assessment, medical examination and psychosocial evaluation.

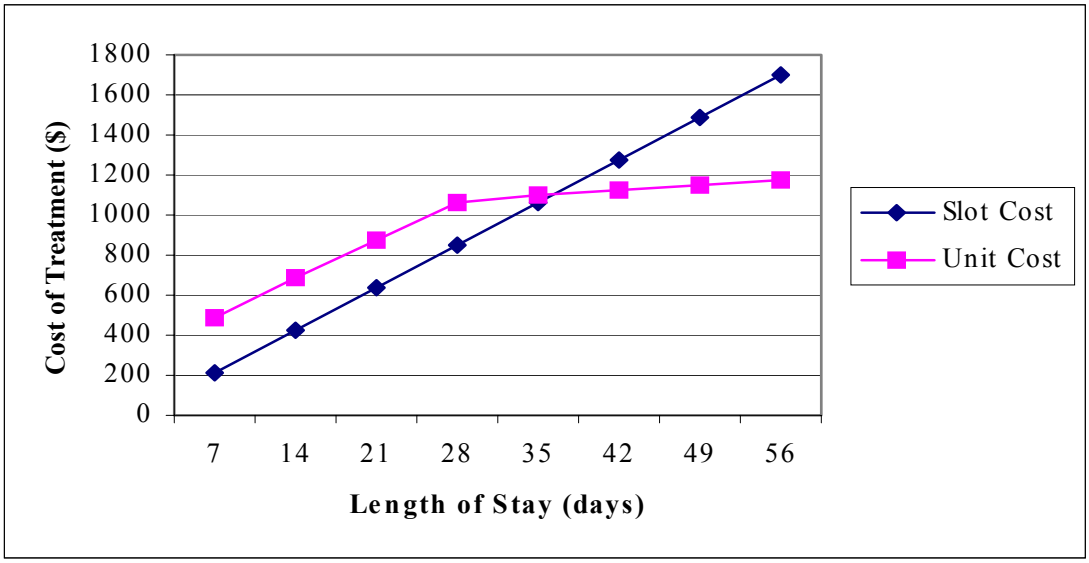
Clients typically began treatment at the "primary" level, or level I. They participated an average of 21 calendar days (15 days of care) at this level, every week receiving one hour of individual counseling and four 3-hour sessions of group counseling. While 700 clients dropped out at this stage, about 500 continued to level II. These clients participated in an average of seven calendar (six treatment) days of treatment consisting of one hour of individual counseling and two group counseling sessions three hours long. Level III was characterized as a regular outpatient SDU (the "regular group" program). Each client here received an average of four weeks of treatment consisting of weekly group counseling sessions lasting one hour each. Although the program was designed to be more than eight weeks in duration, the average length of stay was approximately 31 days due to drop-outs.

We graph and compare the "apparent" costs using the slot cost and unit cost approaches in Exhibit III-10. Note that since we did not have individual client service utilization data, this analysis only takes partial advantage of the unit cost data to first break out intake costs, and then to differentiate the (non-intake) per client day costs in each of the three levels of care. Under a slot cost approach, we calculate that it cost $11,000 per treatment slot, which would treat almost 12 individuals per year at a cost of $930 per person, or $30 per day. A client treated 7 days (and then quitting) would seem to cost $210, compared to $930 for a client staying 31 days, and $1,700 for a client staying 56 days.

A unit cost analysis provides a different perspective, however. Our first observation is intake assessments cost $300 before treatment has actually begun. This is fully one third of the average cost per client served. Early drop-outs take a significant proportion of this program's (or any program's) resources away before they have done much good. The full unit cost analysis

breaks out not only the intake costs, but the costs per day in each of the three treatment stages: the costs per day step down as intensity is reduced, from $28 per day in the first three weeks, to $26 in the transition week, and ultimately $4 per day in the standard outpatient stage. Thus, the costs at day 7 are actually about $500, and at day 31 they are about $1,100, but less than $1,200 at day 56. This clearly illustrates the point that a unit cost approach will gives a quite different perspective on the cost of substance abuse treatment than the simplest slot cost approach.

EXHIBIT III-10
COMPARISON OF COSTS OF TREATMENT FOR UNIT COST AND SLOT COST METHODS



A somewhat better indication of the profile of treatment costs is gotten if we simply adjust for intake costs and ignore the stages (the most rudimentary unit cost). We would calculate that at day 7 a client would represent $440 in costs ($300 for the intake, and 7 times $20 per day); at day 31 they would account for about $920; and at day 56 they would have costs of $1,460. This profile would be about half way between the unit cost and slot cost profiles.

There is a further and particularly critical implication from this analysis for economic evaluations that might look at the value or contribution of alternative lengths of stay. In the current cost conscious environment, a great deal of effort has been put into reducing costs, and one of the strategies is to reduce the length of stay. When a slot cost method is employed for the analysis, a 10 percent reduction in length of stay will apparently translate into a 10 percent reduction in treatment costs. However, the unit cost analysis demonstrates that in a treatment

environment with progressive stages of treatment involving reduced intensity of care, the savings from a 10 percent reduction in length of stay may be only a few percent.

In a cost benefit or cost effectiveness analysis this "slot cost" bias in estimating the cost of care biases the results against treatment, giving a poorer ratio of benefits to costs from greater length of stay.

IV. SUMMARY AND RECOMMENDATIONS

IV. SUMMARY AND RECOMMENDATIONS

1. SUMMARY

The public substance abuse treatment field is changing the way it does business. It will need better data on treatment cost in the new environment. The field started with slot cost funding. The slot cost is an amount sufficient to maintain one "client year" of treatment, recognizing that a single slot will have to accommodate several different clients over the course of a year, depending on the actual length of stay of those clients. Indeed, the slot cost method was functional for several decades when most publicly supported treatment went through community-based providers holding grants from public agencies.

Public treatment systems are moving in directions that will require better cost data. One direction is contracting for managed care systems, which may be operated by either commercial behavioral health vendors or by entities established and owned by community-based organizations. However owned, these systems are negotiating contracts that require more sophisticated unit cost data combined with data about individual client receipt of services, instead of the traditional slot cost estimates. Medicaid is being used more often to purchase these services and the publicly subsidized substance abuse treatment system is seeking some of these dollars. Medicaid will most likely be fee-for-service, or managed care. Again, quite different data is required for purposes of negotiating and reimbursing treatment. Unit cost data such as that provided by the Substance Abuse Treatment Cost Allocation and Analysis Template (SATCAAT) can prove useful to providers in this environment.

2. IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

There are clear implications from this analysis. Costs are a quite important aspect of the modern substance abuse treatment system, and keeping costs low while maintaining quality is one of the major challenges. This analysis has tangible implications on several fronts.

2.1 Implications for Further Research

Evaluation of substance abuse treatment will require increasingly accurate data on the composition and cost of treatment. The most basic "lot cost" technique produces average cost estimates that are too low for short stay clients and too high for long stay clients. At the very least, these analyses demonstrate the importance of breaking out intake/assessment costs versus costs of services delivered across the course of a treatment episode. To the extent that it is possible to identify further variations in the intensity of services across an episode of care, this will also yield more accurate cost estimates.

Of course, the unit cost estimates from the SATCAAT are most effective when accompanied by data about use of specific services by particular clients. The SATCAAT primarily provides cost factors that can be used to develop the cost estimate for a particular client or pattern of care. These data about treatment utilization are very similar if not identical to claims data filed with private and public insurance plans. Providers that have used grant "slot cost" funding often do not maintain high quality data about service utilization by individual clients. Improvements in this area will be necessary in order to make the best use of the unit cost data.

Several improvements may be suggested for the SATCAAT instrument. Some types/units of services can be better defined and measured. "Group counseling" data is usually only collected on the number of group sessions, but not on the intended and actual number of clients in each (or an average) session. This makes it difficult to measure the "dosage unit" for clients accurately. Similar data on sessions, duration and intensity should be collected for "case management" and for "client education." This added detail will give much better information about the dosage of services clients receive, and will, therefore, give greater insight in future research into the relationship of SDU size to treatment costs.

Finally, these analyses tell us nothing about the cost benefits or cost effectiveness of treatment. Client outcome data are required to arrive at conclusions about the relative cost effectiveness of alternative treatment regimens and providers. Unit cost data are critical to analyses of the cost effectiveness of separate service elements or bundles of services.

2.2 Implications for Policy

Providers are subject to increasing levels of accountability for spending on substance abuse treatment and outcomes. In fact, the work done with SATCAAT (and similar cost systems) demonstrates that it is feasible to get high quality data on the composition and cost of treatment. Policy makers can call for better data on service utilization and cost of care with a reasonable expectation that it can be accomplished. This will make it possible to make comparisons across providers of the nature, intensity and cost of care and services being delivered. Good quality data can be produced, although at some cost. Still, the cost of developing meaningful data for a SDU is much less than the cost of performing an outcome analysis for a representative sample of their clients. Policy makers will need to invest in outcomes as well as cost data to make the best use of either type of information.

2.3 Implications for Treatment Practice

Again, the SATCAAT development work demonstrates that it is possible to develop credible unit cost data for community-based substance abuse treatment organizations. The SATCAAT is a particular system; however, it demonstrates that standard accounting principles can be applied to this problem. Providers have the data, knowledge and further information that is necessary for the development of unit cost estimates. Where documented data does not exist, it is reasonable to obtain and use the "expert" judgement of the managers of a provider in order to allocate expenses toward types of activities and specific services.

Many community-based organizations have already encountered increased needs for improved unit cost data. "Slot cost" data can not meet the needs of a fee-for-service reimbursement system—nor do those who produce such estimates propose that they can or should. Private insurance has long used fee-for-service reimbursement, and both Medicaid and Medicare have as well. Although Medicaid and Medicare have not been used extensively for reimbursement of substance abuse treatment, this practice is clearly increasing.

Managed care systems are increasingly numerous, whether utilized for private or public reimbursement of care. These systems require improved cost data from providers, both for purposes of negotiating contracts and reimbursement rates, and for the management of their finances. Revenue streams for providers are changing, and providers will need much better financial data in order to function in the future. Unit cost data generated from the SATCAAT (or similar cost systems) can't solve most of the financial management issues; however, it can be a useful tool that providers will need in order to function in the changing financial environment.

REFERENCES

REFERENCES

Anderson D., Borland B., Cartwright W., & Basin G. (1998). Service-level costing of drug abuse treatment. *Journal of Substance Abuse Treatment*, *15*:201-11.

Avants, S.K., Margolin, A., Sindelar, J., Rounsaville, B., Schottenfeld, R., Stine, S., Cooney, N., Rosenheck R., Li S.H., & Kosten T. (1999). Day treatment versus enhanced standard methadone services for opioid-dependent patients: A comparison of clinical efficacy and cost, *American Journal of Psychiatry 156*(1): 27-33.

Cisler, R., Holder, H., Longabaugh, R., Stout, R., & Zweben, A. (1998). Actual and estimated replication costs for alcohol treatment modalities: case study from Project MATCH, *Journal of Studies on Alcohol*, *59*(5): 503-12.

Capital Consulting Corporation (1994). *Measuring the cost of substance abuse treatment services: An overview*. Report to the Center on Substance Abuse Treatment.

Capital Consulting Corporation (1998). *Uniform system of accounting and cost reporting for substance abuse treatment providers*. Report to the Center on Substance Abuse Treatment.

Delaney, P.R., Epstein, B.J., Nach, R., & Budach, S.W. (2000). *Wiley Gaap: Interpretation and Application of generally accepted accounting principles 2001*. John Wiley and Sons: NY, NY.

French, M., Sacks, S., de Leon. G., Staines, G., McKendrick, K. (1999). Modified therapeutic Community for mentally ill chemical abusers: Outcomes and costs, *Evaluation and the Health Professions*, *22*(1): 60-85.

French, M., & McGeary, K. (1997). Estimating the economic cost of substance abuse treatment. *Health Economics*, *6*:539-44.

Genuardi, J., King, E., Harwood, H., McKusick, D., & Mark, T. (1998). *National spending estimates for mental health, alcohol and other drug abuse treatment, 1986-1996*. Technical Report,Volume 1. Report to the Center on Substance Abuse Treatment.

Goodman, A., Nishiura, E., & Hankin, J.R. (1998). Short term drug abuse treatment costs and utilization, a multi-employer analysis, *Medical Care 36:*1214-27.

Goodman, A., Holder, H., Nishiura, E., & Hankin, J.R. (1992). An analysis of short-term alcoholism treatment cost functions, *Medical Care 30*: 795-810.

Goodman, A., Nishiura, E., & Hankin J. R., Holder, H., & Tilford, J. (1996). Long-term alcoholism treatment costs, *Medical Care Research and Review 53*:441-64.

Lewin-VHI, Inc., (1995). *An analysis of pilot data on the cost of substance abuse treatment: Unit cost from 77 service delivery units*. A Technical Report to the Center for Substance Abuse Treatment; National Evaluation Data and Technical Assistance Center: Fairfax, VA.

Mark, T., Coffey, R., King, E., Harwood, H., McKusick, D., Genuardi, J., DiLonardo, J. & Buck, J. (2000). Spending on mental health and substance abuse treatment 1987-1997. *Health Affairs*, *19*(4): 108-20.

Office of Applied Studies (1999). *1997 Uniform Facility Data System (UFDS): Data on substance abuse treatment facilities.* DASIS Series S-6, DHHS Publication No, (SMA) 99-3314.

Office of National Drug Control Policy (2001). National drug control strategy–FY 2002 budget summary. The White House.

Schoenbaum, M., Weiying, Z., & Sturm, R. (1998). Costs and utilization of substance abuse care in a privately insured population under managed care, *Psychiatric Services 49*(12):1573-8.

Weisner, C., Mertens, J., Parthasarathy, S., Moore, C., Hunkeler, E., Hu, T., & Selby, J. (2000). The outcome and cost of alcohol and drug treatment in an HMO: Day hospital vs. traditional outpatient regiments, *Health Services Research 35*(4): 791-812.

Yates, BT. (1999). Measuring and improving cost, cost effectiveness and cost benefit for substance abuse treatment programs. National Institute on Drug Abuse. NIH Publication No. 99-4518.