

NEDS ANALYTIC SUMMARY

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Highlights

Increasing treatment intensity improves economic benefits of treatment for society.



Costs and Benefits of Providing More Intensive Substance Abuse Treatment



NEDS Analytic Summary Series

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 CSAT mission is to expand the knowledge about effective substance abuse treatment and recovery services. In support of these efforts, CSAT established the National Evaluation Data Services (NEDS) contract to provide a wide array of secondary data analysis products to the substance abuse treatment field.

Specifically, the NEDS project is focused upon providing CSAT with an analytic capability to use existing data to address policy- and practice-relevant topics as well as future research and evaluation activities. NEDS has developed several product lines designed to provide analytic findings to substance abuse treatment policy makers, service providers, services researchers and evaluators in a format that is most useful to the end user.

The Analytic Summary is one of the NEDS product lines. The purpose of the Analytic Summary is to provide a brief summary of each technical report produced by NEDS written in non-technical language. Readers who find the Analytic Summary results of interest can contact the original NEDS technical report authors for more detailed information. Through this process, the NEDS Analytic Summaries provide information to the substance abuse treatment field and promote linkages among different areas in the field.

This Analytic Summary

This particular NEDS Analytic Summary is based on the NEDS Technical Report titled *Do the Benefits of More Intensive Substance Abuse Treatment Offset the Costs?* (Koenig, L., Harwood, H. Sullivan, K., and Sen, N., 2000). For a more thorough discussion of the analysis and findings, please obtain a copy of the complete Technical Report. Information for doing so is provided on the last page of this summary.

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Costs and Benefits of Providing More Intensive Substance Abuse Treatment

Analytic Importance

One important function of CSAT is to expand the knowledge about, and the availability of, effective treatment and recovery services for those affected by alcohol and other substance abuse. In sponsoring these analyses of the data it collected, CSAT is attempting to gain useful insight into the fundamental question: *What constitutes effective (and cost-effective) treatment, and for what populations?*

Substance abuse treatment has been shown to help clients reduce drug and alcohol dependence, and thereby reduce or eliminate economic impacts upon society; yet treatment providers are often called upon to maintain quality treatment services with fewer dollars.

While financial pressures sometimes result in cost cutting, continued investment in longer and more intensive treatment may improve outcomes. In contrast, providing less intensive care per treatment episode may result in savings that can allow more people to receive care, but also may undermine treatment quality and outcomes.

Analytic Purpose

Within the treatment field, it is believed that more intensive treatment will produce better client outcomes. This analysis examines some of the evidence regarding this view.

Treatment professionals have many ways to differentiate more versus less intensive treatment. Among these are:

- Length of treatment sessions
- Frequency of sessions
- Duration of treatment episodes.

The array of services available and the size of caseloads also affect intensity.

Costs may be higher to provide more intensive treatment. Spending more on treatment can be justified when it reduces other costs imposed by substance abusers on society. For example, treatment has been shown to have the following economic benefits for society:

- Decreased crime
- Decreased health care costs
- Decreased welfare reliance
- Increased income taxes paid.

The purpose of this analysis was to examine whether more intensive treatment increased the economic benefits of treatment for society. This analysis addressed two principal questions:

- What are the additional benefits to society of increasing treatment intensity?
- How do these benefits compare to the additional costs of treatment?

Other analyses conducted through NEDS explore the average cost and length of stay (e.g., Analytic Summary # 12: *Treatment Episode Costs and Duration by Type of Care*).

Analytic Approach

This analysis uses data on 3,556 clients with complete data who participated in the National Treatment Improvement Evaluation Study (NTIES). These clients were treated in 72 treatment units that comprise five major treatment settings: short-term hospital, short-term residential, long-

This analysis addresses two questions:

- **What are the benefits of increasing treatment intensity?**
- **How do these benefits compare to the additional treatment costs?**



Costs and Benefits of Providing More Intensive Substance Abuse Treatment (cont.)

Economic benefits resulted from:

- Fewer crimes
- Better health
- Reduced welfare payments
- Increased income taxes paid.

Measures of intensity were:

- Length of stay
- Hours of counseling per month.



term residential, outpatient non-methadone and outpatient methadone. Clients were interviewed at treatment intake, at time of discharge from treatment and approximately one year post-treatment.

The specific economic benefits of substance abuse treatment included in this analysis were:

- Reduced criminal justice costs, such as police, courts, jail/prison and parole/probation, for clients who committed fewer crimes
- Reduced victim losses, such as stolen goods, property damage, medical care, and lost wages for clients who committed fewer crimes
- Reduced health care costs, such as nights in the hospital, for clients who had improved health or health care
- Reduced welfare payments to clients who became employed
- Increased income taxes paid by clients whose earnings increased.

Economic benefits from treatment were calculated based on changes in client behavior from before to after treatment. For example, clients who reduced the number of crimes they committed after treatment were said to have produced an economic benefit.

The dollar value for each benefit was calculated using national averages for each type of benefit, and summed for each client.

Two measures of treatment intensity were used in this analysis. The first is Length of Stay, a continuous measure of

treatment length in days. The second is Hours of Counseling (per month), also a continuous measure of the number of counseling hours received as reported by clients.

The costs of longer lengths of stay and more hours of counseling were analyzed and compared to the economic benefits of providing such care. For example, if the results revealed that an additional day of treatment reduced annual societal costs (for health care, crime, and/or welfare payments) by two dollars and increased post-treatment annual taxes on earnings by one dollar, the analysts would conclude that an additional day of treatment would create a three dollar annual benefit to society per client.

Analyses examined the effect of length of stay and hours of counseling on the economic benefits that result from treatment. Regression models accounted for client addiction severity, demographic characteristics, prior treatment, treatment readiness, and related medical problems.

Finally, comparisons were made between the benefit of each added day of care or hour of counseling and the typical cost for more intensive treatment as studied previously in NTIES.

Findings

Overall, the economic benefits increased with more intensive treatment. There were, however, important differences by type of care. First, we looked at the benefits by categories of treatment duration.

Economic benefit of longer treatment stays. Generally speaking, clients who stayed in treatment for the longest period had better outcomes and,

Costs and Benefits of Providing More Intensive Substance Abuse Treatment (cont.)

Adding a day of care improved benefits for the following settings:

- Short-term residential

- Long-term residential

- Outpatient non-methadone.

Adding an hour of counseling improved benefits for the following settings:

- Short-term hospital inpatient

- Outpatient methadone.



Exhibit 1 Average Benefits to Society per Day, by Treatment Setting					
Length of Stay	Short-term Hospital	Short-term Residential	Long-term Residential	Outpatient Drug-Free	Methadone Outpatient*
<=30 days	\$11.34	\$24.43	\$29.94	\$9.50	-
31-90 days	-	\$52.61	\$48.09	\$13.43	\$12.37
91-180 days	-	-	\$32.98	\$11.78	\$21.81
>180 days	-	-	\$44.40	\$18.68	\$37.85

NA: not applicable

*Methadone includes only discontinued methadone clients, i.e., it excludes clients who continued in methadone treatment up to follow-up.

as a result, better economic benefits than clients who stayed in treatment for the shortest period. The average benefit per day of treatment for clients for different lengths of treatment are presented in Exhibit 1.

Comparing clients who stayed the longest with those who stayed the shortest, the average per client benefit per day of treatment ranged from:

- \$53 to \$24 in short-term residential treatment
- \$44 to \$30 in long-term residential treatment
- \$19 to \$10 in outpatient non-methadone treatment
- \$38 to \$12 in outpatient methadone treatment.

Further analysis shows that each added *day* of care improved benefits over the preceding day in three treatment settings (Exhibit 2). The economic benefit of each additional client day in treatment was:

- \$21 for short-term residential treatment
- \$5 for long-term residential treatment
- \$13 for outpatient non-methadone treatment.

In this analysis, though the outcomes were positive among clients who remained for long periods in methadone treatment and short-term hospitals, each additional day of treatment did not significantly improve the economic benefits of treatment in these settings.

Exhibit 2 Benefits Associated with Each Added Day of Treatment and Each Added Hour of Counseling, by Treatment Setting					
Benefits Increase with Each Added:	Short-term Hospital	Short-term Residential	Long-term Residential	Outpatient Non-Methadone	Outpatient Methadone*
Day of treatment	ns	\$21.17	\$5.19	\$13.09	ns
Hour of counseling	\$293.66	ns	ns	ns	\$6.14

ns: No significant or positive relationship was identified

*Methadone excludes clients who continued in methadone treatment up to follow-up; benefit is for one month for each client, yielding \$30.70 benefit for average 5-month treatment episode.

Costs and Benefits of Providing More Intensive Substance Abuse Treatment (cont.)

Economic benefit of more counseling. Clients in short-term hospitals and methadone outpatient treatment did have higher economic benefits when they received more counseling sessions. The per client economic benefit of each additional hour of counseling was:

- \$294 in short-term hospital treatment lasting one month
- \$6 per month, in outpatient methadone treatment lasting five months on average.

In this analysis, economic benefits did not increase significantly when more counseling was provided for clients in short-term residential, long-term residential, and outpatient non-methadone settings. These are settings where counseling is already a frequent and integral part of the treatment regimen.

The costs of more intensive treatment. When the benefits of treatment are greater than the cost of treatment, treatment has “paid for itself.” Studies of the benefits and costs of sub-

stance abuse treatment have found that, on average, the benefits of treatment far exceed the costs of treatment for most clients.

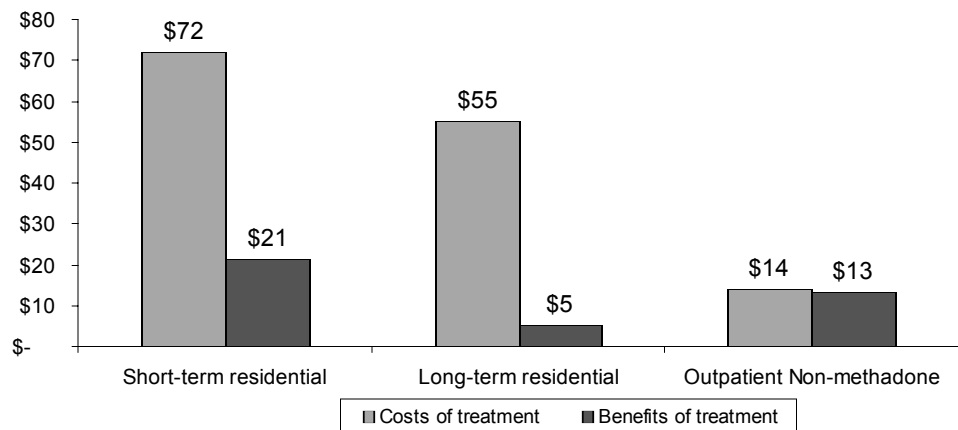
This analysis focused more on the benefits and costs of each *added* day of treatment and each *added* hour of counseling.

- If the benefits exceed costs of added days of treatment or hours of counseling, the extra days or hours “pay for themselves.”
- If benefits do not exceed costs of added days of treatment or hours of counseling, there is still value to intensive treatment but there is also a limit to the value of continually increasing intensity.

The benefits of each added day in outpatient treatment were about equal to the cost of each added day (Exhibit 3). In short-term and long-term residential treatment, the benefits of each added treatment day were found to be lower than the cost of each added treatment

In outpatient non-methadone care, the benefits of each added day of care offset the cost of that day.

Exhibit 3
Annual Marginal Benefits from an Additional Day of Treatment, by Treatment Setting



In short-term hospitals, more counseling generated benefits that exceeded costs of that counseling.

This analysis should be extended with other treatment intensity measures.



Costs and Benefits of Providing More Intensive Substance Abuse Treatment (cont.)

day. Specifically, the additional benefit of each additional day of care was equal to (or can be said to offset) approximately:

- 94% of the additional non-methadone outpatient treatment cost (\$14 per day)
- 29% of the additional short-term residential treatment cost (\$72 per day)
- 9% of the additional long-term residential treatment cost (\$55 per day).

In short-term hospitals, more hours of counseling produced benefits that were 7 times greater than the cost of additional counseling (\$40 per hour). In methadone treatment, the benefits of each hour of counseling were equal to about 20 percent of the cost of that counseling (\$31 per hour).

Implications

The economic benefits of treatment were greater among clients who had the longest treatment durations compared to the shortest. Benefits increased every day that clients remained in treatment in residential treatment (short-term and long-term) as well as in non-methadone outpatient treatment. Benefits also increased for every hour of counseling clients received in short-term hospital and methadone treatment.

The benefits of substance abuse treatment have previously been found to exceed the cost of treatment, so treatment generally pays for itself. While there are benefits to more intensive treatment, each added day of care or hour of counseling does not necessarily result in higher and higher economic benefits to society.

Implications for Research

This study provides a first look at the value of more intensive treatment, and points to the need for more examination. Researchers and analysts should:

- **Study different combinations of treatment type and intensity.** Do combinations of treatment types and intensities work better than purely one versus the other? Which combinations work better for which clients? This will help quantify the benefits of using a “continuum of care” model.
- **Assess the persistent effects of different treatment intensities.** Do clients have different outcomes and sustain treatment benefits longer if they received shorter, more intensive treatment than longer, less intensive treatment?
- **Extend this analysis to non-CSAT funded treatment providers.** The treatment providers included in NTIES may be different from “typical” treatment providers in that they received funding to enhance their treatment services.
- **Assess the benefits of other measures of intensity.** Future studies should consider other types of treatment intensity, such as the array of services, staff/client ratios, and ancillary services.
- **Replicate analyses using methods that better control for similarities among clients in SDUs.** Hierarchical Linear Modeling may help confirm the relationship between treatment intensity and outcomes in a way that controls for

Costs and Benefits of Providing More Intensive Substance Abuse Treatment (cont.)

Policy makers should be aware that spending more on quality treatment helps clients but may not always pay for itself, and therefore is a trade-off with expanding access.

Treatment providers need to make sure they monitor and invest in the most effective level of treatment intensity.



similarities among clients within SDUs (what researchers term “intra-class correlation”).

- **Identify which benefits are associated with treatment intensity.** The economic benefits studied here combine many types of outcomes (e.g., crime, health, productivity) into one index variable. Treatment duration and frequency of counseling may work together to produce different effects on crime, health, and productivity.

This analysis is different from many other treatment analyses in that it uses a dollar-weighted “economic benefit” variable that considers multiple outcomes at the same time. This type of index variable can be compared across studies and over time, and it has practical significance for policy and practice.

Implications for Policy

This analysis adds to a strong body of evidence that treatment benefits well exceed the costs of treatment. This analysis adds to that literature by demonstrating that benefits continue to increase with more intensive treatment in some settings. Better data are needed to corroborate these findings. Policy makers should:

- **Acknowledge the tradeoff between buying more and buying better treatment.** Some providers may not operate at the most effective level of treatment intensity. Policy makers could encourage treatment managers to continually assess the tradeoff between treating more clients and treating fewer with better services.

- **Consider the merits of unlimited non-methadone outpatient care.**

Each additional day of outpatient care is nearly equal to the additional costs. If benefits do not diminish over time, longer treatment is better for clients and society. Policy makers should review policies that limit outpatient treatment duration and review factors that lead clients to leave treatment prematurely.

- **Assure that appropriate continuum of care is used for clients.**

Intensity may encompass more than one episode of treatment and may reflect a movement toward more or less intensive treatment settings.

This analysis is not a definitive analysis of the benefits and costs of intensive treatment, but it does advance a cost-driven discussion about efficiency. The decisions regarding efficiency generally are now located with treatment providers as they select treatment strategies.

Implications for Practice

Treatment providers often need to justify their effectiveness before funding bodies, and generally work to remain as efficient as possible. Implications for treatment providers in particular are to:

- **Compile their own evidence of intensive treatment benefits and costs.** Providers need to assess how much greater are the costs of more intensive treatment than the cost of less intensive treatment associated with client outcomes.

Costs and Benefits of Providing More Intensive Substance Abuse Treatment (cont.)

- **Increase hours of counseling for clients in short-term hospital and outpatient methadone settings.** Additional hours of counseling in these two settings resulted in significant economic benefits.
- **Continue to seek ways to balance treatment alternatives.** Providers need to continually strike the balance between investing in better services and expanding services to more clients.
- **Assess when to move clients to more or less intensive treatments.** Making timely step up/down decisions about clients' level of care will also optimize the value of the public resources devoted to substance abuse treatment.

Treatment providers can use available tools to improve cost accounting and allocation of costs between different levels or types of treatment for clients of different severity levels. With improved sophistication of treatment costing, researchers, policy makers and treatment providers alike will be better positioned to assess the tradeoffs between different intensities of treatment.

Future Steps

The substance abuse treatment field is grappling with strategies to improve effectiveness and efficiency. Not all treatment services and treatment providers are alike, and some offer perhaps a more beneficial "bundle" of treatment services than others. When funding remains static, there remains a tradeoff between enhancing treatment and expanding treatment capacity. As the tradeoff becomes clearer, it will be easier for policy makers and practitioners to understand treatment and consciously select the strategies that help the most substance abusers achieve the best possible outcomes.

References

Koenig, L., Denmead, G., Nguyen, R., Harrison, M., Harwood, H. (1999). *The costs and benefits of substance abuse treatment: Findings from the National Treatment Improvement Evaluation Study (NTIES)*. Prepared under Contract No. 270-97-7016 for the Center for Substance Abuse Treatment. Fairfax, VA. Caliber Associates.

For more information, please contact the National Evaluation Data Services analysis team at (703) 385-3200, or visit the NEDS Web site.

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National Treatment Improvement Evaluation Study (NTIES)

This analysis was performed on data derived from the National Treatment Improvement Evaluation Study (NTIES). The NTIES was a national evaluation of the effectiveness of substance abuse treatment services delivered in comprehensive treatment demonstration programs supported by the Center for Substance Abuse Treatment (CSAT).

The NTIES project collected longitudinal data between FY 1992 and FY 1995 on a purposive sample of clients in treatment programs receiving demonstration grant funding from CSAT. Data are derived from client interviews conducted at three points in time: treatment intake, treatment exit, and 12 months after treatment exit.



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