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Health, Education and Human Services Division

B-261705

July 31, 1995

The Honorable William F. Clinger, Jr.  
Chairman, Committee on Government  
Reform and Oversight  
House of Representatives

The Honorable Cardiss Collins  
House of Representatives

The Honorable Henry A. Waxman  
House of Representatives



Illicit drug use, particularly cocaine use, continues to be a major national concern because of the associated health, economic, and criminal justice problems that result. Cocaine use has been related to cardiovascular and respiratory failure, psychiatric disorders, and acquired immunodeficiency syndrome (AIDS), as well as income-generating crimes and homicide. In 1994, cocaine was one of the most frequently reported illicit drugs in emergency rooms, and has been associated with rising mortality rates. The latest National Household Survey on Drug Abuse<sup>1</sup> results indicate that more than 600,000 Americans continue to use cocaine on at least a weekly basis.

As part of congressional efforts to determine the utility of drug treatment funding allocations, you asked us to provide information on the effectiveness of drug treatment for "hardcore" cocaine users. More specifically, in this letter we: (1) identify those types of clients characterized as hardcore cocaine users and (2) identify recent national cocaine treatment outcome studies from which to evaluate the treatment results for hardcore users.

To conduct this work, we examined the clinical literature to assess whether there was a conventionally accepted definition of the term hardcore. In the absence of a

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<sup>1</sup>U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, National Household Survey on Drug Abuse: Population Estimates 1992 (Rockville, Md.: Oct., 1993), p. 115.

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standardized definition, we asked the National Institute on Drug Abuse (NIDA), in conjunction with its contractor, the Research Triangle Institute (RTI), to help us develop a "working" definition. We then reviewed the treatment literature and interviewed agency officials to identify recent national cocaine treatment outcome studies. Only one national study was found with available posttreatment follow-up data: the NIDA-sponsored Cocaine Treatment Outcome Study (CTOS). But analyses of the CTOS data have not yet been completed. Preliminary findings were analyzed<sup>2</sup> to evaluate the success of drug treatment for the defined hardcore cocaine user. This work was performed from January through July 1995 in accordance with generally accepted government auditing standards.

In summary, our findings suggest, first, that no consensus or clinical acceptance of the term hardcore exists. Current diagnostic manuals do not make reference to this term. Rather, clients are typically categorized and discussed in terms of substance abuse or dependence criterion. Second, CTOS' results indicate that hardcore cocaine users, specified by our working definition, were making sizeable gains in reducing their crack/cocaine use, needle use, drug- and nondrug-related arrests, as well as improving their health and employment status.

However, preliminary CTOS drug use findings do not appear to provide an adequate basis for making conclusions about the success of hardcore cocaine treatment. Self-reports of no cocaine use (abstinence) in the year after treatment are higher than expected in comparison with controlled clinical trials of cocaine treatment, and discrepancies were found between CTOS self-reports of cocaine use and urine test results over a 72-hour period. Objective documentation is not currently available to assess the validity of the other self-reported positive outcome scores. As a result, no national study currently exists that would adequately determine the usefulness of treatment for hardcore cocaine users.

#### DEFINING THE HARDCORE USER

Various definitions of hardcore have been used, principally in the drug policy literature, with no generally accepted consensus of the term's meaning. Among the definitions we identified are the following:

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<sup>2</sup>Study data were provided by NIDA and RTI. We did not verify the accuracy of the data.

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- "Use [of] drugs at least once a week."<sup>3</sup>
- "Use of the substance on two or more days a week for a period of a month or more (or use on 8 days in the prior 30 days)."<sup>4</sup>
- Use of drugs "at least weekly and exhibit[ing] behavioral and societal problems stemming from [the] drug use."<sup>5</sup>
- Long-term users, having a history of regular drug use over a period of at least 2 to 3 years, severely psychologically and physiologically dependent, with impaired psychosocial functioning, and generally resistant to either entering treatment or seeking positive therapeutic change.<sup>6</sup>

Further examination revealed that the term hardcore is not a clinically accepted term either. It does not appear in the major diagnostic treatment manuals (for example, the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Diseases (DSM-IV) or the Department of Health and Human Services' International Classification of Diseases (ICD-9-CM)), nor has it been defined in any rigorous, standardized manner by clinical user groups.

#### Developing a Working Definition of Hardcore Use

Because no accepted, standardized definition of the term hardcore exists, we established in conjunction with NIDA and its contractor, RTI, a clinical definition used to

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<sup>3</sup>Office of National Drug Control Strategy, Breaking the Cycle of Drug Abuse: 1993 Interim National Drug Control Strategy (Executive Office of the President, Washington, D.C.: 1993), p. 6.

<sup>4</sup>Abt Associates, A Plan for Estimating the Number of Hardcore Drug Users in the United States (Cambridge, MA.: June, 1994), pp. 61 and 62.

<sup>5</sup>Office of National Drug Control Policy, National Drug Control Strategy: Reclaiming Our Communities From Drugs and Violence (Executive Office of the President, Washington, D.C.: 1994), p. 65.

<sup>6</sup>Combined definition provided by two prominent treatment research officials at NIDA.

select hardcore cases from CTOS. This was the only study we found with recent national data on cocaine treatment outcomes that could be analyzed to assess the effectiveness of drug treatment for the hardcore user.

The working definition of hardcore was principally based on a frequency-of-use criterion. Individuals reporting cocaine use weekly or more often in the year before treatment were classified as hardcore users. Weekly or more cocaine use in the year before treatment was selected as a criterion to ensure that drug usage was not occasional or sporadic and that a more severe subset of users was being selected for study.

Hardcore cocaine users not in treatment and those remaining in treatment for fewer than 2 weeks were excluded from the study. A 2-week minimum treatment period was selected to ensure that clients participating in the traditional 28 to 30 day short-term inpatient modality would not be excluded from the study. On average, however, treatment stays were considerably longer than 2 weeks. Long-term residential clients stayed in treatment an average of 21 weeks, short-term inpatient clients an average of 4 weeks, and outpatients an average of 14 weeks.

#### The Psychosocial and Behavioral Characteristics of Hardcore Cocaine Users

Before adopting our working definition, we verified that such individuals also displayed an array of psychosocial and behavioral difficulties. This was a particularly relevant endeavor given that the Office of National Drug Control Policy (ONDCP) and NIDA treatment research officials incorporated such characteristics into their hardcore definitions.

We obtained descriptive psychosocial and behavioral data about hardcore cocaine clients meeting our working definition from two sources: CTOS and the Drug Abuse Treatment Outcome Study (DATOS). DATOS was included because it encompassed background information not available in CTOS.<sup>7</sup>

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<sup>7</sup>DATOS represents the largest recent national treatment outcome study, involving approximately 10,000 clients at admission, and more than 4,000 clients at 12 month-followup, from 11 cities. CTOS was conducted in a subset of programs participating in DATOS during an overlapping client treatment time frame. RTI, therefore, contends that

We found that 88 percent of the clients met the American Psychiatric Association's diagnostic criteria (DSM-III-R) for cocaine dependence, a more severe condition than cocaine abuse. While only 3 symptoms are necessary to classify an individual as dependent, hardcore users averaged 6.2 symptoms on the cocaine dependence scale of 0 to 9. Such symptoms include marked tolerance to the drug, social or occupational problems, frequent intoxication, important activities foregone due to use, physical illness or psychological or emotional problems, withdrawal symptoms, and use to relieve withdrawal symptoms and the repeated occurrence or persistence of these symptoms.

Hardcore users also report several symptoms that indicate functional impairment. These symptoms include an excessive amount of time spent consuming drugs, reduced activities due to use, working or caring for children while intoxicated, and social or occupational problems resulting from drug use. On average, hardcore users reported 2.6 functional impairment symptoms on a scale of 0 to 4.

Forty-one percent also met the DSM-III-R criteria for the diagnosis of antisocial personality. These individuals are characterized by such symptoms as an inability to maintain consistent work behavior, failure to conform to social norms of lawful behavioral (that is, vandalism, prostitution, stealing), irritable and aggressive behavior, lack of regard for the truth, impulsive behavior, failure to honor financial obligations, and inability to function as a responsible parent.

About one-third reported attempts at suicide or thoughts about committing suicide in the year before treatment. Suicides have been related to various psychiatric disorders (for example, depression, personality/character disorder), alcohol or other drug abuse, and feelings of hopelessness.

Cocaine is thought to have "extraordinary reinforcing properties," stimulating the user to continue seeking its

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analysis will involve "a very similar, if not the same, treatment population." The bias of introducing a second study sample for identifying the psychosocial/behavioral characteristics of hardcore cocaine users should therefore be negligible.

DATOS was not included in the assessment of treatment effectiveness for hardcore cocaine users because the 12-month outcome data are not yet available.

euphoric "high," often using illegal means to do so. About one-half the hardcore users were involved in illegal activities oriented toward getting money for drug purchases; 20 to 30 percent<sup>8</sup> were involved in such activity on a daily basis.

Given their illegal activities, many cocaine users eventually come in contact with the criminal justice system. As a way of reducing subsequent drug use and criminal behavior, the courts are encouraging arrestees to enter drug treatment. Among hardcore cocaine users, 14 to 53 percent were either required or encouraged by the criminal justice system to be in drug treatment.

Given the multiplicity of problems encountered above, the defined user group can be thought of as meeting an array of potential hardcore symptom characteristics. However, the working definition adopted in our work is only one of many potential definitions that can be generated. Because of the lack of standardization in the field, policymakers, clinicians, and researchers can generate alternative classifications of the characteristics of hardcore cocaine users.

#### DESCRIPTION OF THE COCAINE TREATMENT OUTCOME STUDY

CTOS represents the only recent national cocaine treatment study with posttreatment follow-up data presently available to assess the success of drug treatment for hardcore cocaine users. It features an array of treatment outcome variables reflecting such dimensions as crack/cocaine use, needle use, drug- and nondrug-related arrests, and health and employment status. Because the CTOS data are still being analyzed, we only had access to preliminary data and tables from CTOS. NIDA, in conjunction with RTI, will be conducting additional analyses, including assessment of some of the problems commented on in this report.

CTOS was developed to "rapidly acquire more knowledge about treatment outcomes for cocaine users." To obtain such "accelerated/quick outcomes," the study relied on retrospective respondent self-reports. Clients were interviewed only once, at 12 months postdischarge. They were asked to recall their drug use and drug-related behaviors at three points in time: 12 months before and

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<sup>8</sup>All of the ranges represent percentage variations found between treatment modalities.

after treatment as well as during treatment. Thus, CTOS' methodology differs from the more rigorous prospective longitudinal studies (like DATOS), where clients are interviewed at several points in time, thereby extending study time frames, but minimizing errors of recall. CTOS provides a vehicle for rapid feedback to federal and state agencies addressing the cocaine problem.

CTOS was conducted in seven medium to large cities: Chicago; Miami, Florida; Minneapolis; New York; Pittsburgh; Portland, Oregon; and New Orleans. Within these cities, treatment clinics or programs were selected that

"represented three major treatment modalities: (a) long-term residential programs (therapeutic communities), (b) short-term inpatient (chemical dependency) types of programs, and (c) outpatient nonmethadone (drug-free clinics)."

The selected treatment sites "provided all or a substantial amount" of the drug treatment services to the substance abuse clinical population in these seven cities, reflecting both the public and private health sectors.

A client sample was selected from each participating treatment clinic or program. The sample was comprised of individuals who had been in treatment for at least 2 weeks from 1990 to 1992, had reported using cocaine at least weekly in the year before treatment, had been discharged from March to November 1992, and had consented to participate in the retrospective interview 1 year following discharge. Treatment outcome results are based on 197 long-term residential clients, 167 short-term inpatients, and 186 outpatients, for a total of 550 clients.

Federally sponsored cocaine clinical trials were not included in our hardcore treatment analyses for one or more of the following reasons: (1) sample size was small, (2) treatment facilities chosen for study were geographically limited, and (3) both public and private sectors were not included in the selection process.

#### TREATMENT EFFECTIVENESS FOR HARDCORE USERS: STUDY FINDINGS

Data based on self-reports from CTOS indicate that treated hardcore cocaine users have made substantial gains on several treatment outcome dimensions. Outcome results 12 months after treatment completion (on such dimensions as crack/cocaine use, intravenous needle use, drug-related

arrests, and employment status) demonstrate sizeable improvements, as compared with the period 12 months before entering treatment (see tables 1.1 through 1.5). But the validity of some of these self-report data remains in doubt.

### Use of Cocaine

The most notable measure of treatment success is the elimination of drug use (often referred to as abstinence). For those clients not able to abstain, segments of the drug treatment community support efforts aimed at reducing the use of the abusive or dependent drug. As described above, elimination or reduction of cocaine use has implications for an array of outcome dimensions, including one's health, safety, criminal justice, and employment status.

#### Nonuse (Abstinence)

All hardcore clients, in treatment 2 weeks or longer, reported use of cocaine in the year before treatment,<sup>9</sup> in each of the three treatment modalities (long-term residential, short-term inpatient, and outpatient nonmethadone service). In comparison, almost one-half (45 to 47 percent) reported nonuse of cocaine in the year after treatment.

#### Decreased Daily Use

Across the three treatment modalities, 62 to 64 percent of the clients reported daily use of cocaine in the year before treatment. Only 11 to 22 percent reported daily use in the year after treatment.

### Use Of Crack

Smoking crack or freebasing (by which the hydrochloric acid of street cocaine is removed and the purified cocaine crystallized) provides the user with a more rapid and intense drug experience than snorting cocaine. The drug is more rapidly absorbed into the pulmonary circulatory system and transmitted to the brain in less than 10 seconds, offering a high that lasts about 5 minutes. The craving for crack can become more important than anything else in

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<sup>9</sup>The finding that 100 percent of the subjects used cocaine before treatment is not surprising. As a prerequisite for sample inclusion, clients had to be primary cocaine users at treatment entry.



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the user's life, precipitating serious decline in one's social, economic, and physical life.

#### Nonuse (Abstinence)

From 12 to 24 percent of the client sample reported not using crack in the year before treatment. The crack nonuse rate increased to 53 to 62 percent in the year after treatment.

#### Decreased Daily Use

Approximately one-half (50 to 56 percent) the sample reported daily crack use in the year before treatment. Only 9 to 17 percent reported daily crack use in the year after treatment.

#### Intravenous Needle Use

Administration of the drug through intravenous needle use places the user at high-risk for human immunodeficiency virus (HIV) infection and AIDS. In a 1992 report by the Bureau of Justice Statistics<sup>10</sup>, needle sharing was noted as the second most common means of HIV transmission.

Between 15 to 24 percent of the client sample reported intravenous use in the year before treatment. This decreased by more than 50 percent, to only 6 to 8 percent, in the year after treatment.

#### Drug-Related Arrests

Drug use has been shown to be related to criminal activity and financial costs to the community. The Drug Use Forecasting (DUF) program, for example, found that at least 60 percent of the male arrestees sampled in 1990 for burglary, larceny-theft, stolen vehicles, and robbery tested positive for drug use while being held in central booking facilities. The cocaine metabolite was one of several substances identified in urinalysis results. Given the cost of daily or weekly use, resorting to illegal income-generating activities over time can become a necessity, particularly for those in lower-income groups.

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<sup>10</sup>U.S. Department of Justice, Bureau of Justice Statistics, Drugs, Crime, and the Justice System: A Report from the Bureau of Justice Statistics (Rockville, Md.: Dec., 1992), p. 11.

Approximately 1 in 3 clients (30 to 40 percent) reported drug-related arrests in the year before treatment. This decreased to about 1 in 10 clients (9 to 11 percent) in the year after treatment.

#### Employment Status

In efforts to reduce the welfare and unemployment rolls and make individuals more responsible, productive members of society, employment status provides an indicator of treatment program success in returning the individual to a more functional role within the larger society.

About one-third (31 percent) of the clients indicated that they were working in the week before treatment. This rate increased to between 41 and 46 percent in the year after treatment.

#### EVALUATING THE VALIDITY OF THE FINDINGS

Beyond obtaining the results, we assessed the validity of the data. Doing so was of particular concern given that both before- and after-treatment findings were based on client self-reports.<sup>11</sup> Urinalysis data were collected on a 50-percent subsample of respondents so that the cocaine self-reported drug use data could be verified.

We found the self-reported drug use data available from CTOS, at the present time, appear to be biased in the direction of underreporting drug use and overreporting abstinence in the year following treatment. No external evidence exists to judge the validity of the criminal justice and employment-related results.

The drug use self-reports appear to be biased, for four reasons:

1. On a 50-percent CTOS subsample, discrepancies were observed between self-reported drug use in the past 3 days and urine test results.

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<sup>11</sup>In a previous GAO publication, a review of the literature demonstrated self-reports to be generally valid prior to 1985. More recent studies have demonstrated conflicting evidence. Drug Use Measurement: Strengths, Limitations, and Recommendations for Improvement (GAO/PEMD-93-18, June 25, 1993), pp. 36-37.

Three-fourths of those individuals whose urine tested positive for the cocaine metabolite benzoylecgonine (81/109) did not report using cocaine in the past 72 hours.<sup>12</sup> This group comprised 27 percent of the total subsample of 296 clients.

Overall sample agreement between self-reports and urinalysis was shown for only 205 of the 296 clients (69.3 percent).<sup>13</sup>

Because urinalysis can only verify cocaine use in the recent past (approximately 72 hours), approaches that combine multiple indicators of drug use, including self-reports, urinalysis, hair analysis, and corroborating data from significant others (for example, family or friends), would have provided a more precise level of self-report validation. Unfortunately, multiple indicators necessitate higher costs and additional time.

2. Clinical trials do not support the high rates of continuous abstinence found in CTOS at 12-month followup.

A Yale University study,<sup>14</sup> involving 121 cocaine dependent clients, was designed to evaluate the 1 year follow-up effects of both a psychotherapy and pharmacotherapy cocaine treatment program. Only 9 percent of the Yale study clients were continuously abstinent for the complete year following treatment termination. This is far fewer than

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<sup>12</sup>This discrepant result may, in part, be explained by previous findings indicating that illicit drug users are less likely to report sensitive drug use information in the recent past as compared with the more distant past.

<sup>13</sup>While the conclusion that urinalysis confirmed the clients' self-reports of nonuse in 60 percent of these cases (177/296) is encouraging, it may also be problematic. Urinalysis testing for the cocaine metabolite covers approximately a 72-hour window of opportunity. If the cocaine was administered 3 weeks before testing, urinalysis results would be negative.

<sup>14</sup>Kathleen M. Carroll, Bruce J. Rounsaville, Charla Nich, and others, "One Year Followup of Psychotherapy and Pharmacotherapy for Cocaine Dependence: Delayed Emergence of Psychotherapy Effects," Archives of General Psychiatry, Vol. 51 (1994), pp. 989-997.

the 45 to 47 percent reporting continuous abstinence in CTOS.

A joint study by the University of California at San Francisco, the San Francisco Veterans Affairs Medical Center, Stanford University, Cornell University, and the California Department of Mental Health,<sup>15</sup> involving 450 cocaine dependent clients, sought to determine the clinical and cost-effectiveness of cocaine inpatient and outpatient treatment. Results indicated that 29 percent of the inpatients were continuously abstinent at the 12-month followup and 17 to 26 percent of the outpatients were continuously abstinent at 12 months.

A University of Vermont study,<sup>16</sup> comprising 38 cocaine dependent clients, compared the effects of a 6-month cocaine behavioral therapy program with standard drug counseling. Only 5 percent of those attending the standard drug counseling program were continuously abstinent for at least 4 months and 42 percent of those attending the behavioral therapy program were continuously abstinent for at least 4 of the 6 months.

3. Drug treatment experts and the CTOS project officer and study advisory committee believe that the preliminary CTOS self-report data underreport cocaine use in the year following treatment.

At a panel recently convened by us, drug treatment experts questioned the accuracy of the clients' self-reported drug use data. The project officer and advisory committee recommended that minimum/maximum self-report confidence levels be developed to provide better estimates of drug use at the 12-month posttreatment followup; work is in progress.

4. Accurate recall over a 24-month period of time is problematic, thereby making before- and after-treatment comparisons questionable.

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<sup>15</sup>Barbara E. Havassy, David A. Wasserman, Carolyn Weisz, and others, "Clinical and Cost-Effectiveness of Inpatient and Outpatient Treatments for Cocaine Dependence" (submitted for publication).

<sup>16</sup>Stephen T. Higgins, Alan J. Budney, Warren K. Bickel, and others, "Achieving Cocaine Abstinence With a Behavioral Approach," American Journal of Psychiatry, Vol. 150, No. 5 (1993), pp. 763-769.

CTOS is a retrospective, rather than a prospective study. Clients interviewed at 12 months postdischarge are expected to accurately recall drug use and other drug relevant behaviors 24 months earlier (that is, at 12 months before treatment). Several research methodologists<sup>17</sup> have questioned the ability of respondents to provide accurate responses over an extended period of time. They argue for validation indicators to determine the accuracy of the responses. One such indicator cited above, urinalysis tests, did not support recent (past 72 hour) self-reported drug use findings. Additional indicators are necessary to determine the accuracy of more temporally distant self-reported data.

### OBSERVATIONS

In summary, no standardized definition of what constitutes a hardcore drug user exists. The term has not been recognized in the clinical literature, and we do not believe that it would be a useful addition to the nomenclature, given its ambiguity and lack of acceptance. Use of more universally accepted terminology would make debate and implementation of subsequent legislation more viable.

We found only one national study currently available for assessing the treatment effectiveness of hardcore cocaine users. But while discharged cocaine clients reported substantial reduction in their drug use and criminal justice involvement and improvement in their employment status 12 months following treatment, we cannot currently accept these results. More analytic work is necessary before the CTOS findings can provide reliable estimates of treatment success. At this stage of the analyses, we cannot determine either the magnitude of the treatment gains or the level of outcome variation between the three treatment modalities.

In short, the effectiveness of drug treatment for hardcore cocaine users cannot be validly assessed at this time.

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<sup>17</sup>Elizabeth Wells, J. David Hawkins, and Richard Catalano, "Choosing Drug Use Measures for Treatment Outcome Studies. II. Timing Baseline and Follow-up Measurement," The International Journal of the Addictions, Vol. 23, No. 8 (1988), pp. 875-885; and Dwayne Simpson and S. Sells, "Effectiveness of Treatment for Drug Abuse: An Overview of the DARP Research Program," Advances in Alcohol and Substance Abuse, Vol. 2 (1982), pp. 7-29.

Data from a more definitive national study, DATOS, involving a follow-up sample of more than 4,000 clients, should be available in the near future to better assess the treatment effectiveness of this client population.

AGENCY COMMENTS

NIDA officials reviewed a draft of this letter and provided technical comments (see enclosure 2). They generally agreed with our finding that CTOS does not currently provide a sound basis for making policy decisions about hardcore cocaine users given the bias that exists in the self-report data. They are currently conducting further analyses to determine the basis of the discrepancies between self-reported cocaine use and urinalysis test results and to identify those demographic and clinical groups reporting high and low levels of consistency among these measures. NIDA claims that the CTOS self-report findings are in "contrast" to other drug research studies; that investigators have generally demonstrated self-report data to be "useful" measures of drug use, criminal behavior, violence, and abuse. Our review of the literature does not support NIDA's claim. Since 1985, we found mixed results when evaluating the utility of self-report measures and have recommended that NIDA conduct self-report validation studies<sup>18</sup> to confirm the utility of self-reports among various target groups and drug users.

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If you have any questions or would like to discuss this material further, please contact Rose Martinez, Assistant Director, at (202) 512-7103 or Jared Hermalin, Senior Health Policy Researcher, at (202) 512-3551.



~~for~~ Mark V. Nadel  
Associate Director  
National and Public Health Issues

Enclosures 2

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<sup>18</sup>Drug Use Measurement (GAO/PEMD-93-18, June 25, 1993), pp. 36-37, 58-60.

COCAINE TREATMENT OUTCOME RESULTSTable 1.1: Drug Use 1 Year Before Treatment as Compared With 1 Year After Drug Treatment

Figures are percents

| Drug type and frequency of use | Types of Treatment                 |       |                                   |       |                         |       |
|--------------------------------|------------------------------------|-------|-----------------------------------|-------|-------------------------|-------|
|                                | Long-term residential<br>(n = 197) |       | Short-term inpatient<br>(n = 167) |       | Outpatient<br>(n = 186) |       |
|                                | Before                             | After | Before                            | After | Before                  | After |
| <b>Cocaine</b>                 |                                    |       |                                   |       |                         |       |
| No use                         | 0.0                                | 47.3  | 0.0                               | 45.1  | 0.0                     | 45.9  |
| < Weekly                       | 0.0                                | 17.0  | 0.0                               | 23.8  | 0.0                     | 14.8  |
| Weekly                         | 36.5                               | 19.1  | 37.7                              | 20.1  | 36.6                    | 17.5  |
| Daily                          | 63.5                               | 16.5  | 62.3                              | 11.0  | 63.4                    | 21.9  |
| <b>Crack</b>                   |                                    |       |                                   |       |                         |       |
| No use                         | 11.9                               | 60.4  | 11.5                              | 52.7  | 23.9                    | 62.4  |
| < Weekly                       | 0.5                                | 12.2  | 0.0                               | 20.4  | 2.8                     | 8.1   |
| Weekly                         | 32.0                               | 15.7  | 36.4                              | 18.0  | 23.3                    | 12.9  |
| Daily                          | 55.7                               | 11.7  | 52.1                              | 9.0   | 50.0                    | 16.7  |
| <b>Any illegal drug</b>        |                                    |       |                                   |       |                         |       |
| No use                         | 0.0                                | 42.6  | 0.0                               | 39.5  | 0.0                     | 40.3  |
| < Weekly                       | 0.0                                | 17.8  | 0.0                               | 24.0  | 0.0                     | 15.1  |
| Weekly                         | 31.0                               | 20.8  | 32.9                              | 24.6  | 32.3                    | 19.4  |
| Daily                          | 69.0                               | 18.8  | 67.1                              | 12.0  | 67.7                    | 25.3  |
| IV <sup>a</sup> drug use       | 15.1                               | 6.1   | 23.9                              | 7.8   | 15.9                    | 8.1   |

<sup>a</sup>Intravenous.

Source: Cocaine Treatment Outcome Study.

Table 1.2: Health Status: Suicidal Thoughts or Attempts 1 Year Before Treatment as Compared With 1 Year After Treatment

Figures are percents

| Suicidal status  | Types of treatment                 |                                   |                         |
|------------------|------------------------------------|-----------------------------------|-------------------------|
|                  | Long-term residential<br>(n = 197) | Short-term inpatient<br>(n = 167) | Outpatient<br>(n = 186) |
| Before treatment | 33.7                               | 37.4                              | 31.7                    |
| After treatment  | 13.3                               | 19.7                              | 12.4                    |

Source: Cocaine Treatment Outcome Study.

Table 1.3: Health Status: Physical Health at Time of Leaving/Completing Treatment as Compared With 1 Year After Treatment

Figures are percents

| Physical health status | Types of treatment                 |                                   |                         |
|------------------------|------------------------------------|-----------------------------------|-------------------------|
|                        | Long-term residential<br>(n = 197) | Short-term inpatient<br>(n = 167) | Outpatient<br>(n = 186) |
| Better/much better     | 59.2                               | 63.5                              | 61.1                    |
| The same               | 21.4                               | 18.6                              | 27.6                    |
| Worse/much worse       | 19.4                               | 18.0                              | 11.4                    |

Source: Cocaine Treatment Outcome Study.



Table 1.4: Arrests/Illegal Acts 1 Year Before Treatment as Compared With 1 Year After Treatment

Figures are percents

| Arrests/<br>illegal<br>acts                         | Types of treatment                    |       |  |       |                         |       |
|---|---------------------------------------|-------|--|-------|-------------------------|-------|
|   | Long-term<br>residential<br>(n = 197) |       | Short-term<br>residential<br>(n = 167) |       | Outpatient<br>(n = 186) |       |
|   | Before                                | After | Before                                 | After | Before                  | After |
| Drug-<br>related<br>arrests                         | 40.3                                  | 10.8  | 30.5                                   | 9.0   | 39.2                    | 9.8   |
| Nondrug-<br>related<br>arrests                      | 59.0                                  | 20.1  | 49.7                                   | 26.9  | 50.0                    | 17.9  |
| DUI/DWI <sup>a</sup><br>arrests                     | 10.8                                  | 0.0   | 16.2                                   | 2.4   | 12.9                    | 0.5   |
| Illegal<br>activity<br>to get<br>money for<br>drugs | 66.8                                  | 20.9  | 51.8                                   | 18.0  | 47.8                    | 17.9  |

<sup>a</sup>Driving under the influence/driving while intoxicated.

Source: Cocaine Treatment Outcome Study.

Table 1.5: Employment Status in the Week Before Treatment as Compared With the Week Before Followup Interview

Figures are percents

| Employment status              | Types of treatment                 |       |                                   |       |                         |       |
|--------------------------------|------------------------------------|-------|-----------------------------------|-------|-------------------------|-------|
|                                | Long-term residential<br>(n = 197) |       | Short-term inpatient<br>(n = 167) |       | Outpatient<br>(n = 186) |       |
|                                | Before                             | After | Before                            | After | Before                  | After |
| Working                        | 18.2                               | 40.5  | 29.5                              | 45.7  | 30.5                    | 42.4  |
| Looking for work               | 5.9                                | 10.0  | 4.8                               | 15.2  | 5.7                     | 7.1   |
| Homemaker                      | 4.8                                | 13.2  | 4.8                               | 9.1   | 14.9                    | 17.4  |
| In school                      | 0.5                                | 4.7   | 0.6                               | 1.8   | 1.1                     | 2.2   |
| Disabled/<br>retired           | 4.8                                | 8.4   | 3.0                               | 4.3   | 5.7                     | 8.7   |
| Jail/<br>institution           | 13.9                               | 10.5  | 20.5                              | 12.2  | 4.6                     | 7.6   |
| Drug/<br>illegal<br>activities | 38.5                               | 5.3   | 18.7                              | 0.6   | 21.3                    | 4.3   |
| Other                          | 13.4                               | 7.4   | 18.1                              | 11.0  | 16.1                    | 10.3  |

Source: Cocaine Treatment Outcome Study.

COMMENTS FROM THE NATIONAL INSTITUTE ON DRUG ABUSE

DEPARTMENT OF HEALTH &amp; HUMAN SERVICES

Public Health Service  
National Institutes of HealthNational Institute on Drug Abuse  
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Mr. Mark V. Nadel  
Associate Director  
National and Public Health Issues  
Health, Education, and Human Services Division  
U.S. General Accounting Office  
441 G Street, N.W.  
Washington, D.C. 20548

Dear Mr. Nadel:

The following are comments from the National Institute on Drug Abuse (NIDA) to be included in the GAO correspondence, "Treatment of Hardcore Cocaine Users" (GAO/HEHS-95-179R).

**Use of CTOS**

NIDA agrees with GAO that the Cocaine Treatment Outcome Study (CTOS), at this stage of analysis, does not provide an adequate basis for policy on treatment for "hardcore" cocaine abusers. Discrepancies between urinalysis and self-reports indicate the existence of bias in the data. For this reason, data from CTOS should not be interpreted in the absence of statistical confidence intervals and adjustments for bias.

CTOS has well-understood limits because of its retrospective design and use of self-report data. It is intended to provide early data on cocaine treatment outcomes that will be augmented or replaced with better data from the national Drug Abuse Treatment Outcome Study (DATOS).

**Self-report data**

The discrepancies in CTOS between urinalysis test results and self-reported cocaine use in the past 72 hours are of concern to NIDA, particularly insofar as they stand in contrast to findings from other drug abuse research studies. In previous research, investigators have examined the reliability and validity of self-report data, and the usefulness of self-report data has been demonstrated. Subjects voluntarily disclose very sensitive information about drug use, criminal behavior, violence, and abuse. Self-report data are consistently found to be more accurate and comprehensive than physical records (e.g., arrest records, clinical records, employment pay stubs). Urine tests and self reports have been highly consistent in research on patients treated for heroin addiction.

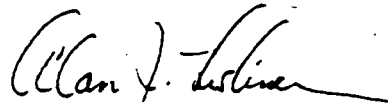
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**Correction for bias**

NIDA is developing analyses to determine the sources of discrepancies in CTOS self-report and urinalysis data, and to predict who is less likely to admit recent drug use. In preliminary work, being married, spending more time in treatment, and re-entering treatment prior to follow-up are predictive of self-reported use consistent with urine test results. Subjects who were in short-term inpatient treatment, a modality that has heretofore received little study, were less likely to self-report cocaine use consistent with urinalysis. Profiles based on further analyses of CTOS data may be used to make more precise corrections for bias. Progress has also been made in statistical work to use multiple indicators of drug use to adjust for bias and to establish confidence intervals for estimates of drug use.

The Institute appreciates the opportunity to review this correspondence and to offer comments on it. Dr. Frank Tims or Dr. Bennett Fletcher, both at 301-443-4060, are available to offer further assistance if needed.

Sincerely,



Alan I. Leshner, Ph.D.  
Director

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