

Developing a National Addiction Treatment Information System

**An Introduction to DENS:
The Drug Evaluation Network System**

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Abstract

The purpose of this article is to test the applicability and utility of the Drug Evaluation Network Study (DENS), a timely electronic information system that tracks trends in substance abuse treatment. This article examines existing large-scale data collection efforts, discusses the rationale and design of the DENS system, and presents results of the DENS pilot phase. Clinical staff from more than 40 service delivery units in five cities were trained to conduct intake assessments on laptop computers with the computerized Addiction Severity Index (ASI). The DENS computer system also included an automatic data transfer protocol to allow regular transmission of ASIs and other data, to a central server at Treatment Research Institute (TRI). Descriptive information and discharge status were also collected. Several problems were encountered during the early stages of the pilot phase, including obtaining consecutive cases from treatment programs, computerization and software application, treatment staff turnover, and assuring quality of data. Data is presented on 4,300 adults entering drug and/or alcohol treatment in the non-randomly selected DENS pilot programs between June 1996, and April 6, 1998. Various examples of how DENS data can be used are presented.

Introduction

Although an estimated 1 million Americans enter addiction treatments each year (ONDCP, 1997a), we know very little about this population. In particular, we have no recurring, descriptive information on such basic characteristics as demographics, types and amounts of substances used prior to treatment entry, or the nature and severity of “addiction related” problems in the areas of medical health, employment, criminal activity, family relationships, or psychiatric status. The lack of systematic and timely information on the population of substance dependent individuals in our nation’s treatment system has been recognized as a problem by the Office of National Drug Control Policy (ONDCP, 1997b).

In response to this information gap, and with the support of the Office of National Drug Control Policy, we have designed and initiated the Drug Evaluation Network System (DENS) to collect clinically and policy relevant information directly from patients entering a national sample of addiction treatment programs. This system uses a standardized and well-validated interview collected on laptop computers and transmitted electronically to a central server on a weekly basis. In the text that follows, we first review the most prominent data collection systems in the addictions field. In the second part of this article, we discuss the rationale and design of the system. Finally, we present the results of our initial pilot phase and discuss plans for the expansion of DENS.

Review of Existing Data Collection Efforts

Drug Abuse Warning Network

The Drug Abuse Warning Network (DAWN) collects information on adults and adolescents presenting to emergency medical care and medical examiner’s offices across the country. The goal of the survey is to identify patients whose hospital emergency treatment or death was related to an episode of alcohol or drug use and to record the nature of the alcohol or drug involvement. DAWN data have been collected since the early 1970s (Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1997d) and the network now includes approximately 488 hospital emergency departments and 145 medical examiners’ offices from 41 metropolitan areas (Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1997c,

1995). Emergency department sites are randomly selected, with over-sampling in 21 metropolitan statistical areas. DAWN is an ongoing data collection system and reports are issued semiannually.

Arrestee Drug Abuse Monitoring Program

Another nationwide study, expected to be in 75 cities by the year 2000, is the Arrestee Drug Abuse Monitoring Program (ADAM). The National Institute of Justice established the ADAM program in 1997 to assess the nature and patterns of drug use among those arrested and charged with crimes. Arrestees are asked to provide voluntary and anonymous urine specimens, which report objective evidence of recent drug use. This data is collected quarterly at 23 adult sites and 10-12 juvenile sites (ONDCP, 1997a).

Community Epidemiology Work Group

The Community Epidemiology Work Group (CEWG), sponsored by the National Institute on Drug Abuse (NIDA) since 1976, is a network of researchers from 20 major metropolitan areas in the United States and selected foreign countries (NIDA, 1997b). Their primary objective is to provide “ongoing community-level public health surveillance of drug use and abuse” (NIDA, 1997c). The CEWG meets semi-annually to present and discuss quantitative and qualitative research data collected from ethnographers and epidemiologists working in the drug field, law enforcement agents, and drug treatment providers.

Youth Risk Behavior Survey

The Youth Risk Behavior Survey (YRBS) collects data on a national sample of 9th to 12th graders and youths aged 12 to 21 years (in or out of school). Its goals are to focus the nation on health risk behaviors among youth and to assess how risk behaviors change over time (Center for Disease Control, 1997). Behaviors measured include tobacco, alcohol and other drug use, sexual behavior, dietary habits, physical activity, and any behavior resulting in injury. The surveys, conducted biennially, are confidential and consist of 84-items completed on a scannable questionnaire.

Monitoring the Future

The Monitoring the Future study has been collecting data on the nature and frequency of adolescent drug use since 1975. This survey, conducted yearly in public and private high schools across the

country, is sometimes referred to as the High School Senior Survey (NIDA, 1997a). Questions are asked on 20 classes of drugs as well as alcohol (Johnston et al., 1997).

The National Household Drug Survey

The National Household Drug Survey (NHDS) is conducted on a representative sample of the “civilian, non-institutionalized” population of the United States, aged 12 and older (Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1996). Supported by the Substance Abuse and Mental Health Services Administration since 1992, NHDS is a survey that collects data on recency and frequency of use of various illicit drugs, opinions about drugs, and drug related problems. The survey design purposely oversamples African Americans, Hispanics, and young people in an effort to improve the accuracy of estimates for these groups. Preliminary estimates, population estimates, and main findings are released each year.

The Drug and Alcohol Services Information System

The Drug and Alcohol Services Information System (DASIS) is a two-part reporting system which includes the Uniform Facility Data Set (UFDS) and the Treatment Episode Data Sets (TEDS). The UFDS survey collects 1-day census data on the population of state and federal funded drug and alcohol providers. The 1-day point-prevalence method has been used since 1976 to collect information about services provided at each facility, affiliation with other institutions, licensure, client capacity, and sources of treatment revenue (SAMHSA, 1997b).

Collection of the TEDS data started in 1989 with a “minimum data set” of demographic and substance use information on admissions to “TEDS eligible” providers (SAMHSA, 1997a). “TEDS-eligible” includes all providers receiving public funds, however, each state or jurisdiction determines eligibility and participation. Providers not receiving public funds and those not reporting to state agencies (such as the Bureau of Prisons, Veterans Administration, and Indian Health Bureau) are not included. The TEDS data collection process makes timely reporting very difficult since treatment providers use various, internal methods to collect data and send the data to state directors in various formats to be standardized and consolidated and reported on.

Rationale and Design of the Drug Evaluation Network System

As can be seen from the brief review, there are data collection systems in place that provide regular information about patterns of drug use among arrestees (ADAM), hospital emergency department admissions (DAWN), and the general population of adults (NHDS) and adolescents (MTF, YRBS). However, only one of these systems (TEDS) is focused upon individuals seeking treatment for drug and alcohol problems. In addition, most of the available data collection systems report findings infrequently (semi-annually to annually), and few of these systems offer information other than basic demographics and patterns of drug use. We think these limitations are significant and we have tried to address them in the design of the DENS.

The Need for a System Focused on Treatment Programs

Timely, scientifically valid clinical information is needed to document trends in the field. Early, accurate reporting on the emergence of new types of drug problems would allow for proactive clinical efforts. Information regarding the use of welfare, criminal justice and/or mental health resources by those entering addiction treatment would allow local, state, and national policy makers to identify differences between types of programs and communities, and to plan more coordinated and efficient programs to deal with the multiple problems of substance abusers (McLellan & Weisner, 1996). A separate advantage of a system focused on treatment programs is that such a system would lay the groundwork for both targeted outcome studies, comparing different treatment modalities and types of patients, and nationwide outcome studies.

The Need for More Comprehensive Information on Treatment Seeking Individuals

Alcohol and drug addiction affect many aspects of an individual's life. Co-existing problems such as unemployment, crime, mental and physical health problems, and child abuse influence the course and outcomes of treatment and are significant public health concerns in their own right. With this in mind, we felt that a national survey of substance-abusing dependent patients entering treatment should be broader than just a report of drug use patterns and frequency. The system should include information relevant to the multiple clinical, administrative, fiscal, evaluative, and policy questions that arise regarding the sequelae of substance dependence.

The Need for More Timely and Responsive Reporting

There has been substantial change in the characteristics of drug problems and the nature of drug treatment over the past decade. There is every indication of continued change within the substance abuse treatment field in the years to come. Thus, there will be an even greater need for “real time” information about patient characteristics, their “addiction related” problems, and the acuity of those problems to inform those planning and administering our nation’s substance abuse treatment system.

We reasoned that to meet the above needs in a cost efficient manner, random sampling of treatment programs would be necessary (rather than attempting to report on the full population). To provide ease of collection and speed of transfer, an interactive computer system would be important. Such a data collection and transfer system should be easy to use at the program site and provide information that would be useful to clinical staff in patient placement decisions, treatment planning and administrative reporting. The system should allow the information to be available rapidly and continuously, thus enabling observation of changes over time. These needs; sampling of programs, collection of more comprehensive patient information,, sensitive reporting, and data collection that provides clinical and administrative value, led to the design of specific elements of the DENS system.

Sampling of Treatment Programs

It is not feasible to design a data collection system that would require regular reporting from the entire population of treatment programs, nor on all patients entering addiction treatment. Thus, we decided early on that the system would attempt to represent only the most prevalent treatment modalities and the geographic areas of greatest utilization. The decision was made to implement DENS in methadone maintenance, residential (hospital and non-hospital based), and outpatient treatment modalities (including both intensive outpatient and traditional outpatient). We included both alcohol and drug treatment programs in our sample because both of these problems are important and generally coincide in treatment seeking individuals. Since most treatment programs treat patients with funding from a variety of public or private sources, we decided not to exclude any program from the sample based on the type or mix of financing.

A choice was made to include only **adult** treatment programs in the DENS system at this time. While it is, of course, critical to monitor the adolescent treatment system, cost constraints was one factor limiting us to include only adults. Applying the DENS with adolescents is also complicated by the fact that the majority of addiction treatment for adolescents occurs in “non specialty” settings (such as schools, private offices, mental health centers, and drop-in clinics), and there is no national register of adolescent programs from which to sample.

Also, it was decided that the initial DENS system will be implemented in urban areas only. While lack of inclusion of rural areas is a clear limitation of the DENS system, it was felt that expanding to 25 of the largest cities in the United States would allow for maximum comparison to the other national databases previously mentioned, and would allow us to fulfill the goal of providing a picture of the majority of patients entering treatment across the country. It is hoped that in the future, we will be able to include rural areas.

Collection of More Comprehensive Patient and Treatment Information

Patient Information - The Addiction Severity Index (ASI; McLellan et al., 1992) is the primary source of patient information in the DENS. The ASI includes information on the nature, number, and severity of drug and alcohol problems. In addition, the ASI characterizes the severity of patients’ medical, legal, employment, family/social, and psychiatric problems. Specific information is collected with respect to the 30 days prior to evaluation, and across the patient’s lifetime in each of these areas.

Our decision to focus on the ASI followed more than 20 years of replicated reliability, validity, and utility evaluation of the instrument with a very wide range of substance abusers (McLellan et al., 1992, McLellan et al., 1985, McLellan et al., 1980). Additionally, many treatment programs currently use the ASI as the primary source of evaluation or admission information, and many states have begun to mandate use of the ASI during intake or assessment.

It should be noted that most of the participating treatment programs use the ASI as the intake or evaluation document, and therefore make clinical decisions regarding patient placement and

treatment care planning with the collected information. However, when the data are transferred to the central server at TRI, no identifying information is included. No one outside the treatment program receives any identifying information about clients. This protects the patients' privacy rights and allows us to be in complete compliance with federal guidelines on confidentiality which state that "research involving survey or interview procedures where...responses are recorded in such a manner that subjects cannot be identified directly or linked through identifiers" are exempt (DHHS, 1981).

Although federal regulations state that federally funded programs need not be reviewed by Internal Review Boards (IRB) unless the identity of the subject may be ascertained by investigators (Wright, Pescosolido, & Penslar, 1997), several of the larger academic institutions providing data for DENS have sent the study procedures through their internal IRB. There has not been a case where the IRB did not approve participation in DENS.

Treatment Information – While treatment content and process are very important, collecting too much of this information would place an undue burden on the treatment programs. Furthermore, the National Evaluation of Substance Abuse Treatment (NESAT) (CASA, 1997) and surveys of the Veteran's Administration (VA) treatment system (Humphreys, et al., 1996) provide a thorough examination of therapeutic orientation. Therefore, we decided to limit collection of treatment information to a discharge status report including modality of treatment, length of stay, and type of discharge. Length of stay and type of discharge have been found to be related to treatment outcome (Gottheil et al., 1992; Simpson, 1997; Hubbard et al., 1997), but this information is traditionally difficult to obtain.

Program Information - The DENS Service Delivery Unit Descriptor was designed to be compatible with earlier surveys of treatment programs, including the National Treatment Improvement and Evaluation Study (NTIES; Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1997), The Drug and Alcohol Services Information System (DASIS: Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1997) "Uniform Facility Data Set", and the VA's Drug and Alcohol Treatment Inventory (Swindle et al., 1995). It was important to build from this early work to ensure maximal comparability with these large-scale data

collection projects. Information is gathered each year and includes type of facility, services and referrals provided, types of patients accepted, background of staff, and funding sources.

More sensitive and responsive reporting

It is clear that the ASI alone will not provide information on the constantly changing and highly specific questions that continually face those in the national and state policy arena. We reasoned that there would have to be provision for new questions to be asked regarding the changing issues related to addiction (e.g., how many pregnant women are in the system? How many patients are insured under Medicare? How many have been diagnosed with Hepatitis?). To address these areas of interest as they arise, we designed the DENS with the capability to repeatedly change up to 10 extra questions and thus allow collection of specific, contemporary information in a timely manner.

Ease of use and clinical value for programs

Because the burden for data collection was focused on admissions personnel, the system needed to be as simple and as clinically useful as possible. DENS programs receive a laptop computer with software that collects ASI information and additional questions, prints a clinically useful narrative report on each patient, and transfers data to our central server. Since many counselors and intake workers in the field have had little experience with computers, this interface needed to be as simple and error-proof as possible. The data collected ideally would be able to replace much of the program's current intake package, not simply lead to additional work. Initially, the full ASI (45-60 minute interview) was loaded on all computers. Later, in response to a request from our participating drug court, software for a shortened version of the ASI (the *ASI Lite*) was developed.

The computers were chosen based on the ease with which an interviewer can talk with a patient in a normal fashion, and simultaneously record information rapidly and accurately. All data are automatically screened for errors and inconsistencies during the interviewing process so that answers can be clarified while the patient is available. The laptops allow the interviewer to establish good rapport with the client by maintaining appropriate posture, eye contact, and body language - as would occur in a typical paper-and-pencil format.

To have immediate clinical value at the time of admission, DENS software transforms the ASI data into a six to nine page clinical narrative suitable for use as an intake or admission summary and as a guide to initial treatment planning for each patient. This clinical narrative is used by many providers to satisfy state requirements for an individualized intake evaluation, and as the beginning of the "biopsychosocial" assessment. Additional software to aid clinical treatment planning and treatment tracking is under development.

To encourage participants to send data as regularly as possible, we designed the data transfer to be as easy as saving a word processing document. By clicking on "send data", the collected ASIs are sent via pre-programmed modem to TRI in only 5 minutes. If there are any questions during the data transfer process, or at any other time, there is a toll-free number for technical support. An additional feature of the modem transfer package is that it allows us to automatically change any of the "10 extra questions" whenever a program connects to the TRI server. The interviewers see the new question the next time they use the ASI software, without having to make any changes to the program or software themselves.

All facilities have complete access to their program database and partial access to the national database, to permit comparisons between local and national trends. No program receives data from other (identifiable) programs, and the data transfer system is specifically designed not to transfer any identifying information (i.e., name, social security number, phone number, address, etc., are not transferred).

Each treatment program is given quarterly reports that compare their site-specific data to the entire DENS database. Program administration staff place a high value on these reports which they have used to justify funding, help with accreditation proceedings, and reallocate staff. A 10 page tabular report can be generated within 48 hours. Thus, when a DENS report is issued, it includes data on clients entering the system as recently as the past week.

Finally, as an additional incentive to participate, and to offset any extra costs, a \$1,000 stipend is provided to each program for each year of participation.

Results of the Pilot

During the 2-year pilot phase, the DENS information system was installed in 40 treatment programs in 5 cities: New York, San Francisco, Chicago, Philadelphia, and Albuquerque. Thirty-four of these programs continue to participate and serve as the "laboratory" for us to develop a responsive, national monitoring system. The goals of the pilot were to evaluate the acceptability and ease of use of the computerized interview, evaluate the ability of the data transfer and database management system, assess the extent to which DENS meets reporting needs of the treatment programs and national agencies, and to explore the adaptability of this system in a randomly selected, nationwide group of treatment programs. Described below are several problems that were encountered at the program level including limiting data collection to a single service delivery unit within a facility, computerization, manpower, staff turnover and programming changes, obtaining data on consecutive admissions and discharge status, and assuring quality of data.

Operational Definition of a “Treatment Program”

Initially, we planned to include four programs (one methadone maintenance, one intensive outpatient, one traditional outpatient, and one residential program) in each city. We quickly found major differences among providers in their use of the term “program.” For example, one provider referred to its “methadone program” as including seven different sites throughout the city where methadone was administered. Another provider distinguished between its “women’s program” and its “men’s program”, while both treatments occurred in the same location and were delivered by the same staff.

To bring some consistency to this effort, we adopted the term and definition of the “Service Delivery Unit” (SDU) as our definition of a “treatment program.” The SDU was first used by the Center for Substance Abuse Treatment in NTIES, and is defined as “a single treatment modality in a single site” (SAMHSA, 1997). This definition has allowed us to make a rational decision regarding the limits of inclusion for our sampling. For example, under this definition, the above referenced men’s and women’s “programs” were both included as one outpatient SDU since they were at the same location.

Despite this operational definition, there were still problems getting cases from just those programs (SDUs) that were included in our sample. This is because many facilities have several different SDUs operating concurrently, often serviced by a central intake unit where a patient's eventual site of treatment is not known at the time of assessment. We currently collect all interviews from a central intake unit and then sort them by matching the identifier on the ASI with the discharge status report from the SDU. However, this adds significant time to the process and is dependent on receiving timely discharge status reports, so we are considering other ways in which to gather data from just those SDU's selected for inclusion in DENS.

Quality Assurance

We have not had significant problems with the completeness of the data or the number of errors. Less than 5% of collected ASIs were missing data needed for calculation of the composite scores; this is substantially better than our experience with pen and paper ASI interviews (Fureman et al., 1994). However, we have had some problems with validating data entry (i.e. quality assurance), since this requires the ability to cross-reference coded answers with written comments. As part of our revised quality assurance process, participants are asked to complete some of their earlier ASIs on paper, with the comments attached, and send us copies that can be checked for coding accuracy and returned with feedback.

Computerization Problems

While some treatment program staff were quite computer knowledgeable, many other staff described themselves as "computer phobic." We began the pilot phase with "pen-based" 386 IBM compatible laptop computers. This allowed the interviewer to record comments on a blank screen with a magnetic pen. Although staff at all programs liked the idea of being able to write on the computer screen with the pen, they were less than enthusiastic with the results. Regardless of the neatness of their writing, the printed ASIs appeared less than professional. We ultimately abandoned our original 386 MHz pen-based computers in favor of Pentium® computers. All types of computers, however, are susceptible to technical problems, and DENS staff typically spend several hours per week on the

telephone assisting program staff with a variety of computer-related difficulties from “frozen” screens to installing printers.

Despite our efforts to make the computerization as easy as possible, there are still some staff who prefer to use pencil-and-paper interviewing. We have discouraged this since it adds unnecessary time, eliminates the “extra questions”, and bypasses the error-checking advantage of the ASI on computer. Currently, only 1 of our 37 programs completes the ASI on paper, and then data enters it on the computer.

As could be expected some computers have been stolen, and some have been broken. When this happens, we replace the computer as quickly as possible. Paper ASIs are used while the computer is unavailable, and we have assisted programs in entering the paper interviews into the database.

Based on our experience in the first pilot cities, the format of the ASI and the narrative report software have been improved. We made improvements in printing functions, movement between questions and sections within the interview, and the ability to print comment pages. We also found that the location of the “extra questions”, at the end of the ASI, often caused them to be skipped. We are in the process of upgrading the software to insert these extra questions into the most appropriate section of the interview, along with more explicit directions for answering them. In addition, the crosschecks have been found to be extremely useful, but will be made even more comprehensive. The upgraded software will also include treatment care planning templates as well as the clinical narrative summary.

Problems with Staff Turnover

In addition to problems with computer technology, staff turnover has posed a significant challenge to the collection of valid, consistent data. One early “finding” from the project, is that an average of 50% of the staff in these SDUs either left or changed positions within 1 year. We expected some turnover and budgeted for shorter “booster” training in the following year, but the amount of turnover was underestimated and there is a need for more extensive ASI training and site visits. This need for additional training prompted us to distribute more training manuals and “quick reference guides”. The toll-free hotline continues to be available, and is staffed approximately 8 hours each day.

We also encountered staff turnover with respect to directors and administrators of treatment programs. About eight SDUs have “dropped out” of the study due to changes in direction or statewide initiatives that affected the volume of patients, number of staff, or implementation of other intake assessment tools. This not only affects the quality of data, but the balance of programs in a particular city. In one city, for example, we handpicked a large treatment and research facility that included outpatient, intensive outpatient, and methadone maintenance SDUs. After a few months of participation, several interviewers were replaced, the responsibility for intake evaluations was transferred to another department, and the director who initially agreed to participation left on a sabbatical. This left us with only one SDU, representing only one modality (inpatient/residential treatment) in that city.

While staff turnover affected the implementation of the DENS pilot, there may be even more important effects of staff turnover on patient retention. In a study on the effects of counselor continuity on outpatient treatment participation McCaul and Svikis (1991) found that clients in their “same counselor” condition remained in treatment significantly longer than clients in the “different” counselor condition. In a paper on staff issues in the drug treatment field, Gustafson (1991) reported that 70% of treatment programs stated that the worst retention problems were with paraprofessional counselors who received unacceptably low salaries and inadequate fringe benefit packages. These unintended findings from the pilot phase of the DENS project suggest the potential for additional information on a variety of treatment related issues.

Obtaining Consecutive Admissions

Obtaining consecutive admissions has also presented a challenge. Some programs in the pilot phase used the ASI only for a sample of clients. In other SDUs, more than one staff processed intakes, but only one member was assigned to collect data for DENS. We made accommodations for most of the problems that might have led to the pilot programs collecting a subsample of admissions (e.g. better training, including narrative report software, providing more computers, staff reminders). One such accommodation was the development of the shortened version of the ASI Lite and the corresponding software. This version has all the composite score items, as well as most important background items,

but takes only 15-25 minutes to complete rather than the 50-60 minutes needed for the full ASI. Even with the better training, extra computers, and shorter ASI, we ultimately may move to a standardized sampling strategy instead of collecting all admissions. However, we will implement full data collection as we expand into the randomly selected samples, and we will review the results at a later point.

Obtaining Discharge Data

We have attempted to collect information about each patient's length of stay, type of treatment received, and discharge status. However, these questions are not currently part of the computerized interview and require admissions staff to complete a log after the client is discharged. While the log only asks for the patient ID number, admissions date, discharge date, discharge status, and modality of treatment, staff rarely have the time to go back to their patient records to complete the log. Furthermore, obtaining written information (i.e., copies of the log) is always challenging. In the future, the computer software will prompt staff to enter this very important information.

Illustrative Data

To illustrate some of the issues that the DENS system will be able to address upon expansion to a random sample, we examined data collected thus far from programs in the five pilot cities. At this writing, there are currently 34 SDUs participating in DENS: 7 traditional outpatient, 9 intensive outpatient, 11 inpatient/residential and 6 methadone maintenance programs are included.

It must be emphasized that these pilot programs cannot be considered representative of the full population of treatment programs and these data should be viewed only as an example of the inferences that can be drawn once our random sample is in place.

Example 1: Ability to Detect and Localize New Drug Problems

One of the unique abilities of DENS, is that it can be used to track the emergence of “new” drug problems over time and/or by geographic region. For example, based on newspaper reports and information reported at Community Epidemiology Work Group meetings in 1997 (NIH, 1997b), it was suggested that amphetamine could be a new “drug epidemic.” **Figure 1** shows the proportion of patients admitted to treatment who reported any use of amphetamine, cocaine, or heroin in the 30 days prior to their admission, by quarter during the years 1996 through early 1998. Data are presented from all modalities of treatment with the exception of heroin, which excludes methadone maintenance programs (92% of methadone admissions report heroin use prior to admission). Nationally, levels of use have remained stable over this time period for heroin, amphetamine, and cocaine.

Example 2: Ability to Provide More Comprehensive Information About the Problems Presented by Patients Entering Treatment

One of the advantages of utilizing the ASI for DENS data collection is the recording of information on the nature and severity of patients’ problems in personal health and social functioning. This is illustrated in **Table 1**, a comparison of gender and three treatment modalities on several of the ASI lifetime and past 30-day items. As can be seen, the patients entering our pilot inpatient/residential SDU’s were younger than patients in other types of treatment; they worked significantly fewer days and made less money than patients in methadone or outpatient care; they were more likely to have legal problems; and more likely to have experienced conflicts with family or others in the past 30 days. Patients in our pilot methadone maintenance SDU’s were more likely to have chronic medical problems and more hospitalizations, but showed less severe psychiatric symptoms.

Example 3: Ability to Collect Information on Issues of Immediate Policy Interest

A unique ability of the DENS is the ability to collect information on issues that are not a standard part of the ASI. For example, due to recent national interest in the changes brought about by “managed care”, we inserted three questions about health care financing. The pilot “extra questions” asked whether each patient was insured by (a) Medicaid, (b) Medicare, (c) private insurance. While there was up to 50% missing data in one pilot city, the valid percentages for each question in each treatment

modality are presented in **Table 2**. It is interesting that not a single person in our pilots residential programs had private insurance (n=607). Patients with Medicaid were more likely to receive outpatient care and to receive intensive outpatient or methadone maintenance treatment than were patients with Medicare or private insurance. Patients with Medicare were most likely to receive inpatient/residential treatment.

Discussion

We saw the need for an ongoing “real-time” system for collecting clinical information from individuals entering addiction treatment programs in the United States. We designed and piloted a computer-based system of rapid, standardized, clinical and policy relevant data collection in a sample of over 40 treatment programs representing four treatment modalities (inpatient/residential, methadone maintenance, intensive outpatient, and traditional outpatient) in five cities (San Francisco, Albuquerque, Chicago, Philadelphia, and New York). Software issues are being resolved by the development of an upgraded software package. The pilot phase identified training and computer issues that have now been satisfactorily resolved. The system has been well accepted and appreciated by most programs that have participated. Furthermore, we have been able to provide rapid, clinically relevant, policy-oriented information that has not been available to this point, that complements and enhances information from other systems (e.g. DAWN, CEWG, ADAM, others), and that can provide a strategic framework for future outcome studies.

We are identifying a national sample of treatment programs from 20 additional cities. Selected programs will include publicly and privately funded programs sampled from a “universe” supplied from the National Facility Registrar and supplemented extensively by additional federal, state, and local sources. We believe this strategy will provide an unbiased sample of information on adults presenting to larger (annual admissions of more than 50) alcohol and/or drug treatment programs from major metropolitan areas in the United States (National Center for Health Statistics, 1997). This strategy was chosen to cost-effectively monitor the treatment-seeking population and to complement other relevant information systems already in place in the largest cities (e.g. DAWN,

ADAM, others). On the other hand, this sampling strategy does not include adolescents, or people being treated in rural communities, individuals seeking help from Alcoholics or Narcotics Anonymous, those treated by private therapists or within correctional facilities. It is anticipated that the DENS system will include these populations as interest grows.

This article presents illustrative data on just three examples of uses for DENS data in sample comparison, localizing and tracking new problems, and needs assessment. It should be clear that there are likely to be unforeseen benefits of a system like DENS. The DENS data can be used to track emergent phenomena (e.g. appearance of new drug problems) and therefore issues of immediate policy interest. DENS can also document nationwide presence or increase in specific problems (e.g. new drug patterns, increased admission of welfare referrals, etc.) with a responsiveness that was previously unavailable. We hope this data will be used to inform policy making. For example, if the DENS system had been available 10-20 years ago, it is possible that the scientific community could have had earlier information on the spread of AIDS in the substance-abusing community, or on the rapid spread of crack cocaine use.

Consistent with our view that this information is necessary for many purposes, the DENS database will continue to be publicly available. At this writing, we are constituting a board of advisors that will recommend the types of new questions to be added, the types and formats of reports, and the best methods for making the data accessible to scientists, students, policy makers, and administrative agencies.

The DENS “advisory board” will include treatment researchers with expertise in sampling, survey design, addiction treatment evaluation, and policy research. In addition, this board will include treatment providers and patients/clients. Finally, to maximize inter-agency information transfer and coordination, senior members of all federal agencies associated with alcohol or drug problems (Office of National Drug Control Policy, National Institute on Drug Abuse, Office of Applied Studies, the Center for Substance Abuse Treatment, the Center for Substance Abuse Prevention, the Veterans Administration, the National Institute of Justice, National Institute on Alcohol Abuse and Alcoholism, etc.) will be invited to participate. This board will be charged with decision-making regarding

sampling, weighting, reporting, determining the data collected in the “extra” questions, and making the DENS data maximally available to researchers, clinicians and policy makers.

Funding from ONDCP now allows for the expansion of DENS into 25 geographically distributed cities, 10 drug courts, and the piloting of an outcome study. This expansion provides a framework for the design of a nationwide, or rapid and cost effective targeted outcome evaluations. Knowing the target population will enable sampling of patients from just those programs of interest - a significant savings in time and money in itself. DENS admission data will make it possible to direct patient recruitment at those programs most likely to admit the types of patients that are the focus of a specific outcome study. Specific recruitment instructions to program personnel and patient consent forms and locator sheets can be delivered within this pre-established system to permit follow-up contact. Thus, instead of a large, slow, costly, and fragmented effort at collecting outcome information on an unspecified sample, DENS will permit the direction of more targeted, rapid and cost effective studies that will provide policy-relevant information.

It is clear that the inclusion of outcome studies will require a study protocol that addresses issues of confidentiality and patient locator information, as well as collection of data on services received while in treatment. The advisory board, comprised of experts in the substance abuse field from various state, federal, and academic agencies will be convened to guide the system as it expands. All state, federal, and academic agencies as well as treatment programs will have access to (non-identifying) data and reports on national changes.

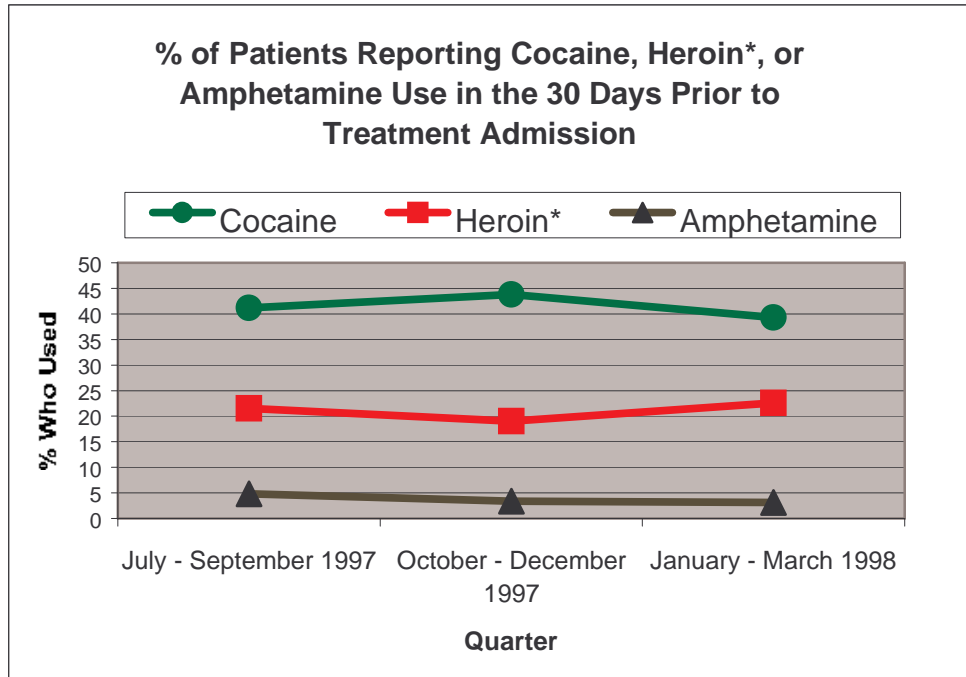
References

- Center for Addiction and Substance Abuse at Columbia University (1997). National Evaluation of Substance Abuse Treatment Service Delivery Unit Questionnaire. New York: CASA.
- Centers for Disease Control (1997). Youth Risk Behavior National Survey. Available from www.cdc.gov/nccdphp/dash/yrbs/ov.html: INTERNET.
- Department of Health and Human Services. (1981) Regulations by the Department of Health and Human Services (HHS) for Institutional Review Boards and Informed Consent. From the Federal Register v. 46, #16, 8366. Office of the Secretary, 45 CFR Part 46, 65-77.
- Fureman, I., McLellan, A.T., Alterman, A.I. (1994). Training for and maintaining interviewer consistency with the ASI. Journal of Substance Abuse Treatment, 11(3), 233-7.
- Gottheil, E., McLellan, A.T., Druley, K.A. (1992). Length of stay, patient severity and treatment outcome: Sample data from the field of alcoholism. Journal of Studies on Alcohol, 53(1), 69-75.
- Gustafson, J.S. (1991) Do More...and Do It Better: Staff Related Issues in the Drug Treatment Field That Affect the Quality and Effectiveness of Services. In Improving Drug Abuse Treatment. NIDA Research Monograph 106, 53-56.
- Hubbard, R.L., Craddock, G., Flynn, P.M., Anderson, J., Etheridge, R. (1997). Overview of 1-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). Psychology of Addictive Behavior, 11(4), 261-78.
- Humphreys, K., Hamilton, E.G., Moos, R.H. (1996). Substance Abuse Treatment in the Department of Veterans Affairs: System Structure, Patients, and Treatment Activities. Palo Alto, CA: VA Palo Alto Health Care System.
- Johnston, L.D., O'Malley, P.M., Bachman, J.G. (1997). National Survey Results on Drug Use from the Monitoring the Future Study, 1975-1995 Volume II College Students and Young Adults. Washington, DC: National Institutes of Health.
- McCaul, M.E., & Svikis, D.S. (1991). Improving Client Compliance in Outpatient Treatment: Counselor-Targeted Interventions. In Improving Drug Abuse Treatment. NIDA Research Monograph 106, 204-215.
- McLellan, A.T., Kushner, H., Metzger, D., Peters, R., Grissom, G., Pettinati, H., Argeriou, M. (1992). The fifth edition of the Addiction Severity Index. Journal of Substance Abuse Treatment, 9(3), 199-213.

- McLellan, A.T., Luborsky, L., Cacciola, J., Griffith, J., Evans, F., Barr, H., O'Brien, C.P. (1985). New data from the Addiction Severity Index: Reliability and validity in three centers. Journal of Nervous and Mental Disorders, 173(7), 412-22.
- McLellan, A.T., Luborsky, L., O'Brien, C.P., Woody, G.E. (1980). An improved diagnostic instrument for substance abuse patients, The Addiction Severity Index. Journal of Nervous and Mental Diseases, 168, 26-33.
- McLellan, A.T., Weisner, C. (1996). Achieving the public health potential of substance abuse treatment: implications for patient referral, treatment "matching", and outcome evaluation. Drug Policy and Human Nature. Philadelphia, PA: Wilkins and Wilkins.
- National Center for Health Statistics (1997). Metropolitan Areas Identifiable in NHIS Public Use Data Files
- National Institutes of Drug Abuse. (1997a). Monitoring the Future Study, 1975-1996. In NIDA Capsules. Available from <http://www.nida.nih.gov/NIDACapsules/NCMTFuture.html>; INTERNET.
- National Institute on Drug Abuse (1997b). Epidemiologic Trends in Drug Abuse Vol. 1: Highlights and Executive Summary Community Epidemiology Work Group June 1997. Washington, DC: National Institutes of Health.
- National Institute on Drug Abuse (1997c). Epidemiologic Trends in Drug Abuse Vol. 1: Highlights and Executive Summary Community Epidemiology Work Group December 1996. Washington, DC: National Institutes of Health.
- Office of National Drug Control Policy (1997a). The National Drug Control Strategy, 1997. Washington, DC: U.S. Government Printing Office.
- Office of National Drug Control Policy (1997b). The National Drug Control Strategy Executive Overview, 1997. Washington, DC: U.S. Government Printing Office.
- Simpson, D.D. (1997). Effectiveness of drug abuse treatment: review of research from field settings. Treating Drug Abusers Effectively. Cambridge, MA: Blackwell.
- Substance Abuse and Mental Health Services Administration & Center for Substance Abuse Treatment (1997). NTIES; The National Treatment Improvement Evaluation Study Final Report. Chicago, IL: The National Opinion Research Center.
- Substance Abuse and Mental Health Services Administration Office of Applied Studies (1997). National Admissions to Substance Abuse Treatment Services: The Treatment Episode Data Set (TEDS) 1992-1995. Rockville, MD: SAMHSA.

- Substance Abuse and Mental Health Services Administration Office of Applied Studies (1997). Uniform Facility Data Set (UFDS): Data for 1995 and 1980-1995. Rockville, MD: SAMHSA.
- Substance Abuse and Mental Health Services Administration Office of Applied Studies (1997). Drug Abuse Warning Network: Annual Medical Examiner Data 1995. Rockville, MD: SAMHSA.
- Substance Abuse and Mental Health Services Administration Office of Applied Studies (1997). Drug Abuse Warning Network: Mid-Year Preliminary Estimates from the 1996 Drug Abuse Warning Network. Rockville, MD: SAMHSA.
- Substance Abuse and Mental Health Services Administration Office of Applied Studies (1996). Preliminary Estimates from the 1995 National Household Survey on Drug Abuse. Rockville, MD: SAMHSA.
- Swindle, R.W., Peterson, K.A., Paradise, M.J., Moos, R.H. (1995). Measuring substance abuse program treatment orientations: the drug and alcohol program treatment inventory. Journal of Substance Abuse, 7, 61-78.
- Wright, E.R., Pescosolido, B.A. and Panslar, R.L. (1997). New Ethical Challenges to Mental Health Services Research in the Era of Community-Based Care. Journal of Mental Health Administration, 24(2), 139-151.

Figure 1



* Excludes Methadone Maintenance

Table 1

DENS ADDICTION SEVERITY INDEX DATA FOR SELECTED COMPARISON GROUPS					
	Male n = 2860	Female n = 1229	Methadone Maintenance n = 1005	Drug Free Outpatient+ n= 655	Inpatient/ Residential n = 1468
Mean Age	37.6	35.0*	40.7	36.3	35.5*
Gender					
% Male	N/A	N/A	78.3	67.5	68.1*
% Female	N/A	N/A	21.7	32.5	31.9*
Race					
% White	32.8	30.7	36.8	25.5	33.3*
% Black	44.9	53.6*	46.1	60.7	42.3*
Employment / Support Status					
Mean Years of Education	11.5	11.4	11.7	11.6	11.6
Mean days worked in past 30	7.1	3.7*	9.4	5.3	4.3*
Money earned past 30 days	\$419.56	163.81*	\$561.12	\$277.36	\$212.69*
Mean Years of					
Alcohol abuse	13.7	9.8*	11.5	13.4	13.2*
Heroin abuse	6.1	4.2*	13.5	1.5	4.2*
Cocaine abuse	5.8	5.3*	5.1	6.4	6.8*
Mean Number of Prior Treatments					
Alcohol abuse	1.2	0.9*	0.6	1.4	1.5*
Drug abuse	2.7	2.3*	4.8	1.7	2.7*
Medical Status					
% with chronic medical problems	34.6	38.09*	40.7	34.3	36.9*
Mean number of medical hospitalizations	2.5	3.0*	3.3	2.4	2.4*
Psychiatric Status					
Ever Attempted Suicide	17.9	25.7*	15.8	23.2	21.8*
Ever Trouble controlling violence	29.0	28.2	22.3	28.5	29.4
Ever Abused physically	21.4	47.9	21.8	31.0	37.3*
Ever Abused sexually	8.2	33.1	8.5	17.6	23.0*
% experienced depression past 30 days	35.5	41.9*	33.7	33.0	38.3*
% attempted suicide past 30 days	2.3	3.1	1.3	2.8	2.7*
% with trouble controlling violence past 30 days	10.2	12.2	7.7	7.7	11.4*
Legal Status					
% ever incarcerated	54.2	34.1	51.5	43.1	55.6*
% detained in past 30 days	14.5	14.3*	7.0	9.2	19.3*
% awaiting charges / trial / or sentencing	14.9	15.0	7.9	6.6	21.2*
Illegal income reported for past 30 days	\$279.74	\$176.66*	\$364.73	\$15.17	\$389.80*
Family Status					
% who had conflicts with family past 30 days	30.5	35.7	22.2	22.7	48.4*
% who had conflicts with others past 30 days	15.0	18.9	8.6	14.0	29.6*

* P < .05

+ Includes Intensive Outpatient

Table 2

DENS CURRENT ADDITIONAL QUESTIONS DATA			
	% with Medicaid	% with Medicare	% with Private Insurance
Inpatient (n = 607)	18.9	33.4	0
Outpatient (n = 276)	26.8	8.3	4
Intensive Outpatient (n = 126)	18.3	11.1	8.7
Methadone Maintenance (n = 430)	18.6	1.9	0.9