Measures of Service Utilization

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INTRODUCTION

There has been considerable progress in the development of quantitative and qualitative measures of substance abuse treatment over the past two to three decades. Early treatment outcome research often approached treatment as a "black box." Reports typically indicated only that study subjects were enrolled in a particular service modality, such as inpatient, residential, therapeutic community, or outpatient care, and there was little or no description of the content or components of the treatment modality. This black box approach to treatment research at times was exacerbated by the failure to characterize the extent to which subjects received the intended services. Dichotomous measures often were used to characterize service delivery; that is, subjects either did or did not participate in the experimental treatment program. It was not uncommon for all the emphasis to be placed on assessment of a subject at the time of treatment entry, discharge, and posttreatment followup rather than on the nature and extent of the intervening services that were delivered. Not surprisingly, much of this earlier research found no differences between alternative types of services and suggested that subject characteristics were better predictors of treatment outcome than was treatment type.

Fortunately, measures of treatment content and delivery became more sophisticated over time. Researchers adopted categorical and continuous measures of treatment exposure. For example, some investigators examined whether the number of treatment sessions that subjects received was an important predictor of postdischarge outcome (Polich et al. 1980), and others focused on subjects' time in treatment (i.e., treatment retention) (Hubbard et al. 1989). In these studies, treatment measures generally were used as independent variables or predictors of posttreatment outcome, and there was little analysis of the effects of various subject and treatment factors on treatment retention or utilization (e.g., the percentage of scheduled treatment visits that were kept). For example, a robust positive relationship has been demonstrated between treatment retention and posttreatment abstinence rates for both alcohol- and opiate-dependent clients across a variety of treatment modalities (Hubbard et al. 1989; Polich et al. 1980; Simpson and Sells 1982).

Recently, psychotherapeutic treatment researchers have adopted the more rigorous clinical trials methodology that has become the standard in medication development research. In this research, it is critical to describe

fully the medication type, dosage regimen, and subject compliance with dosing procedures. Similarly, in psychotherapeutic treatment research, it is critical to systematically characterize type, delivery regimen, and subject utilization of treatment services. At a minimum, investigators need to describe fully the theoretical orientation (e.g., cognitive-behavioral, psychoanalytic, rational-emotive) and therapeutic content (e.g., anger management, communication skills, drug refusal skills) of planned interventions. It is equally important to characterize both intended and actual service utilization patterns, including frequency of subject participation, session duration, and length of retention in treatment.

This chapter examines types of utilization measures employed across the range of treatment modalities studied by the National Institute on Drug Abuse (NIDA) Perinatal-20 projects. The chapter discusses the utility of these measures for better understanding treatment effects on pregnant substance-abusing women while considering treatment utilization measures as both dependent and independent variables. Such measures offer the potential for increased understanding of the complex interactions of subject, therapist, theoretical orientation, therapeutic content, and service utilization variables in treatment outcome research with drug-addicted women.

UTILIZATION MEASURES FOR DIFFERENT TREATMENT COMPONENTS

Intake and Assessment

Many potential subjects are lost to treatment between the initial program contact and the startup of services. Research suggests that as many as one-third of persons seeking treatment fail to complete the steps to successful program admission (Olkin and Lemle 1984; Wanberg and Jones 1973). Admission rates are strongly influenced by several program characteristics. On the one hand, programs may establish intake criteria that significantly restrict the volume or prognostic characteristics of subjects entering treatment. For example, some Perinatal-20 projects targeted women early in their pregnancies, whereas others admitted women with children without regard to their pregnancy status. On the other hand, some programs specifically introduced interventions to improve capture rate into care, including telephone calls and reminder letters prior to scheduled appointments or following missed appointments. It is important to accurately measure and describe program characteristics that influence the rate of treatment entry because they may ultimately influence rates of retention and program completion as well.

Of particular concern in treatment outcome research is the effect of the randomization process on subjects' willingness to participate in treatment and thus in the research project. Subjects often present for study enrollment with strong opinions as to the type of treatment services that they need or want. When randomization results in assignment to a different treatment condition, some women may drop out even before starting the assigned services. For example, one Perinatal-20 project that examined the effectiveness of residential vs. outpatient treatment reported considerably elevated early dropout rates for women randomized into the outpatient condition. It is important to obtain information on subjects' reasons for early treatment termination whenever possible to examine the contribution of the random assignment process to treatment outcomes.

Several measures are readily available to most studies to characterize their success in engaging subjects in treatment. Often, this measurement is accomplished somewhat after the fact by examining overall program utilization rates based on established static capacity. That is, programs track the percentage of subjects who were active in treatment within the reporting period as a function of an established program capacity. For outpatient programs, static capacity typically reflects staffing levels and the recommended client-to-staff ratio based on the intensity of program services. For an inpatient or residential facility, static capacity is simply a reflection of the number of beds available within the program. Timeframes for measuring static capacity can range from daily for bed utilization, to monthly for counselor caseloads, to annually for overall program utilization levels. It is important to consider the impact of static capacity on the total number of subjects who can be enrolled in the project and, therefore, on the statistical power available to test study hypotheses. For example, power was often of particular concern for the Perinatal-20 projects that studied residential treatment services in which limited numbers of beds or relatively long stays considerably restricted the number of study subjects. Although utilization rate provides a gross measure of subject flow into and out of treatment, it fails to clarify the potential loss of subjects prior to formal admission into the treatment program, because these subjects are not counted in such a statistic.

The simplest strategy for measuring admission rate into treatment may be to track the total number of subjects who are formally admitted into the program as a function of the total number of women who request admission. This can be done on the basis of telephone calls, walk-in visits, scheduled appointments, or kept appointments. Such a continuum of measures provides information on a narrowing pool of subjects. For example, the volume of telephone calls inquiring about program availability may reflect an overall level of demand in the geographic area served by the program. In contrast, the ratio of scheduled-to-kept

appointments may be a more specific indicator of program success at capturing into treatment those women who were evaluated as appropriate for program admission during the initial program contact. Such study loss prior to the treatment intervention is illustrated by one of the Perinatal-20 programs that focused on outpatient couples therapy for drug-abusing women. Of the pool of 113 women who consented to project enrollment, 76 percent completed the initial intake interviews, 43 percent completed the couples pretests, but only 34 percent entered a treatment condition.

It is well established that the longer a person has to wait from initial program contact to treatment entry, the more likely it is that the individual will drop out prior to receiving care (Horgan et al. 1991, pp. 123-144). Thus, it may be informative to monitor the number of days or weeks that elapse from the time that a subject first telephones or visits the program to seek admission to the time that she completes formal admission requirements into the program. It also is important to characterize the number of separate visits and different staff contacts that are required to complete the admission process. If there is an additional delay from time of assessment completion to therapeutic service delivery, this should be measured. Finally, selected subject characteristics that can be expected to affect a woman's likelihood of completing the admission process should be monitored. Such factors include referral source (e.g., child protective services, criminal justice agency, social services agency, family member), payment status (e.g., medicaid or medicare, private insurance with deductibles and copayments, self-pay), work or child care arrangements, and readiness for change (Prochaska et al. 1992). It is certainly reasonable to expect that the more demands placed on subjects prior to their receipt of therapeutic services, the higher the rates of treatment dropout.

Traditional Outpatient Treatment

Outpatient, abstinence-oriented drug treatment is the most common and least expensive service modality available in this country (Butynski 1991, pp. 20-52; National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism 1993). It creates relatively little disruption in the daily activities of the subject (e.g., work, family obligations) and also permits the individual to directly apply and practice what she has learned in treatment. Unfortunately, in this regard, outpatient treatment also increases the risk for relapse because alcohol and other drugs are freely available to subjects who return to their communities following each treatment contact.

For methadone maintenance programs, Federal regulations define minimally acceptable levels of pharmacotherapy and counseling services. However, there are no similar national service standards that define a drug-free outpatient substance abuse treatment program. Although most

programs offer some combination of individual and group counseling sessions, theoretical orientation, therapeutic content, and quality of services can vary considerably across treatment sites (Price et al. 1991, pp. 63-92). Sessions can include didactic material (e.g., drug education, relapse prevention strategies, skills building) as well as more traditional psychotherapy.

Intended length of stay and quantity and frequency of counseling sessions also vary across treatment sites. Planned treatment retention can vary from a relatively brief, fixed-length intervention to a more long-term or even open-ended stay. Some programs require participation in only 1 hour per week of individual or group therapy, whereas others require multiple visits for 3 or more hours of counseling per week. For example, treatment services in one Perinatal-20 project consisted of a 16-week, one-session-per-week skills training program. In several others, treatment duration was open-ended and was determined by subjects' achievement of identified treatment goals, such as abstinence, residential stability, and parenting skill development.

Program requirements also may change as a woman progresses through treatment. Early recovery may require more intensive participation, followed by a gradual decrease in quantity and frequency of attendance as subjects achieve longer periods of abstinence and other therapeutic goals. In the authors' Perinatal-20 project, women graduated from intensive-day to partial-day to standard outpatient care as a function of treatment goal achievement, number of drug-free urinalyses, and regularity of attendance.

In considering treatment utilization rates, it is important to specify the length and intensity of prescribed treatment so that a meaningful rate of dropout can be reported and compared with other programs with shorter or longer prescribed terms of treatment. A variety of measures can be used to characterize attendance and participation in standard outpatient treatment settings. The number of individual and group counseling sessions can be counted. Furthermore, to adjust for length of time in treatment, mean sessions per month or the percentage of scheduled appointments kept by the subject also should be examined. Treatment retention or length of stay (typically defined as the time from first to last face-to-face contact with the program) can be measured easily. In addition, if individual or group counseling sessions vary in duration, total treatment hours may provide useful information about the quantity of treatment received by the subject.

More refined analyses permit the study of trends or patterns in subject attendance over time. Rather than simply looking at total days in attendance, it is important to consider the distribution of visit days over

the length of stay in treatment. For example, two subjects who participate in an equal number of individual counseling sessions may have dramatically different attendance patterns and outcomes. One subject attends a particular program as prescribed several times a week for the first month or two of treatment with no evidence of alcohol or other drug use but then relapses and abruptly discontinues treatment with no further program contact. In contrast, another subject continues to use drugs intermittently early in treatment and, as a result, misses many of the required clinic visits; however, she eventually stops her illicit drug use and stabilizes her attendance. Although both subjects may have attended an equal number of sessions, their attendance patterns are different and are associated with different treatment outcomes. Such participation patterns provide valuable data for treatment planning and assist in matching individuals to the appropriate therapeutic interventions. To date, patterns of attendance have not been widely studied as a predictor of discharge status or posttreatment outcomes.

In addition to monitoring quantity, frequency, and pattern of attendance, more qualitative analyses of service delivery ideally should be used. At the grossest level, types of services (e.g., individual counseling, group therapy, educational groups) can be examined. Additional measures can include staff ratings of subject participation in sessions (e.g., five-point scale ratings of subjects' alertness, talkativeness, self-disclosure). In recent years, there has been increased emphasis on subjects' estimates of the number of services they received in the designated period and their ratings of the usefulness of treatment services received. The Treatment Services Review (McLellan et al. 1992) is being widely adopted in this area (see the section titled "Program-Level Utilization Data" for a more detailed description). Finally, subject and staff ratings or presession and postsession evaluations can assist in measuring how well a participant understood the presented material or appeared to benefit from the session. These qualitative measures can enhance understanding and interpretation of quantitative utilization measures. For example, subjects are not likely to continue to attend services that they perceive as irrelevant or poorly delivered.

Intensive Outpatient Treatment

In the past 10 years, intensive outpatient programs have become more popular for the treatment of drug addiction (Center for Substance Abuse Treatment 1994). Generally, such programs consist of 3 or more hours per day of individual and group counseling, with health care, supportive services, and meals available at the program. Subjects typically remain at this intensive level of care for several weeks to several months, depending

on demographic (e.g., residential stability) and drug use (e.g., prior treatment history) characteristics and treatment progress. Several Perinatal-20 projects examined the effectiveness of intensive outpatient programs delivered in a "one-stop shopping" model of care compared with that of standard outpatient services.

Many of these standard outpatient treatment measures also are relevant for characterizing intensive service programs. However, in addition to recording the number of days of attendance, intensive outpatient programs may find it important to report the subject's attendance behaviors within the treatment day. Subjects may arrive late, leave early, or miss sessions for excused and unexcused reasons. Treatment curricula are often cumulative in design, with information in one group session building on or applying information from a preceding session. Thus, absenteeism can significantly affect the overall quantity and quality of a subject's treatment experience. Furthermore, if a subject is showing consistent patterns of missed groups (e.g., first or last daily group), this may alert the program clinicians to external conflicts that may be interfering with her ability to attend the program. It is essential that rates and patterns of attendance be recorded so that causes for poor attendance (i.e., underutilization) can be determined. For example, in the authors' Perinatal-20 project, approximately one-quarter of the patients had chronic problems with late arrival to the daily treatment program; however, this stemmed from such diverse causes as a day care center that opened at the same time as the treatment program, ongoing prostitution as the only source of financial support, or simply the inability to organize morning routines in the household. Individualized functional analyses of this common utilization problem (i.e., lateness) led to different remedial goals for each woman.

At a minimum, daily treatment documentation should include the number and type of standard counseling services received, including individual counseling, group education, and group therapy. In addition, as described above, staff ratings of subject attention and participation can be obtained at each therapeutic session during the day. Development of a within-treatment-day profile of subject activity also is useful for quantifying the nonroutine services that subjects receive only from time to time. Referrals to social services, vocational services, onsite or offsite medical and psychiatric services, or other ancillary appointments often are recorded only as "no shows" on routine group treatment documentation. If a detailed log of daily subject activity is maintained, then a wider range of information can be captured and quantified in a single source document. This same type of documentation system can be used successfully in residential or therapeutic community settings.

Obstetric and Pediatric Medical Services

The service components described above apply to a variety of subjects in diverse treatment settings. However, when the target population is pregnant drug-abusing women, additional services (e.g., prenatal care) are needed and should be carefully measured. As a component of the research design, such ancillary services may be provided onsite at a single comprehensive treatment program or offsite with coordination of services among various treatment sites. In either case, it is critical to monitor and evaluate subject utilization of such services in conjunction with other treatment participation and retention variables.

For obstetric care, the primary units of service include number of prenatal care visits and number and type of fetal monitoring sessions (e.g., sonograms, nonstress tests). Unfortunately, such measures are influenced by the estimated gestational age of the subject's fetus at the time of treatment entry. Thus, a woman who initiates treatment in the first trimester of pregnancy will have more opportunities for prenatal care visits than a woman who initiates treatment in the third trimester of pregnancy. To minimize such bias and more effectively examine subject compliance with prescribed obstetric care, the ratio of kept vs. scheduled obstetric appointments may provide a sensitive measure of service utilization.

In addition to these measures of routine obstetric care, other pregnancy-related measures of medical service utilization may include the number of emergency room visits, number of hospitalizations and length of stay, and number of specialty consultations (e.g., cardiology).

At the time of delivery, new measures are introduced. For the mother, important variables include length of hospitalization, number of postnatal medical followup visits, and utilization of family planning services. For the infant, a variety of pediatric measures can be monitored and evaluated. Specifically, an infant's length of stay in the hospital is an important variable. Examination of the need for and length of stay of infants in the neonatal intensive care unit compared with the standard care nursery also provides valuable information. Following the infant's discharge from the hospital, utilization measures include kept vs. scheduled well-baby pediatric visits, adherence to the recommended immunization schedule, number and pattern of sick visits, infant need for and utilization of specialty services, and frequency and duration of hospitalizations.

Other Ancillary Services

It has been well established that individuals with substance use disorders present with myriad other problems, including psychiatric comorbidity

(e.g., depression), medical problems (e.g., hypertension, reproductive dysfunction), legal issues (e.g., drug dealing, prostitution), and vocational deficits (e.g., poor work history, lack of marketable skills) (James et al. 1991; Lex 1991; Marsh and Miller 1985; McCaul et al. 1991). Subjects often require immediate intervention and assistance in one or more of these life areas.

Most drug treatment programs and clinical research initiatives assess subjects at intake to determine their specific needs and deficits. Such assessments should be completed using a structured intake interview, such as the Addiction Severity Index (ASI) (McLellan et al. 1980). Subjects with a variety of psychosocial or medical problems may find a substantial amount of their time devoted to resolution of these concomitant problems, with less time available for traditional drug treatment services. It is important to monitor the frequency of and compliance with ancillary, offsite appointments and to distinguish between excused (e.g., subject missed a group session because of a medical appointment) and unexcused (e.g., subject was absent from the group because she overslept) absences from drug treatment.

Accurate assessment of subject utilization and followthrough with ancillary services may be a formidable undertaking, requiring substantial staff time and effort. Typically, appointments are scheduled offsite, and intensive followup is required to confirm that subjects kept their scheduled appointments. One strategy is to monitor the most common service referral, particularly if many subjects are referred to a single site. For example, if women with psychiatric issues generally are referred to a nearby mental health clinic for evaluation and counseling, the drug treatment program may elect to establish a formal liaison with this facility. Such collaborative arrangements typically facilitate monitoring of followthrough with prescribed care. Formal mechanisms for data exchange among care sites also can be established, thereby routinizing information provision by program staff. For example, a monthly report of client services could be generated and eliminate the need for followup on individual cases. An alternative strategy is to require subjects to bring written confirmation of a kept appointment; such confirmation could include a brief note on provider stationery, discharge or followup instructions generated by the provider, or even the bill for services.

Primary measures of ancillary care utilization are the number of appointments and the percentage of scheduled appointments kept by a subject. Depending on the number and variety of service referrals, ancillary care utilization can be examined as a single variable summed across all domains of care (e.g., medical + social services + vocational), or it can be examined separately for each domain. The total time spent

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in ancillary care also may be examined, although this requires more precise monitoring of subject participation in offsite services and introduces greater variability into the data.

Applications of Utilization Data

Treatment programs already spend a considerable amount of effort reporting on a variety of program and client characteristics and services to various monitoring agencies. Unfortunately, such measures are often aggregated in State and national reports that do not provide sufficient detail to permit meaningful program self-evaluation. However, these data can be approached from several different perspectives that give increasingly more program- and client-specific information for use in evaluating program operation. These perspectives include program-, counselor-, and client-level data. Given the substantial paperwork burden already existing in most addiction treatment programs, the primary goal should be to use existing data in more sophisticated ways rather than to generate entirely new data sets.

Federal and State Reporting Systems

Program utilization data are already routinely collected for a variety of Federal and State agencies. The majority of these surveys include descriptive information of program services, sociodemographic information on program clients, and measures of service utilization. For example, the National Drug and Alcoholism Treatment Unit Survey (NDATUS) (now known as the Uniform Facility Data Set), funded by NIDA and the National Institute on Alcohol Abuse and Alcoholism, obtains information every 2 years from public and private alcohol and other drug treatment programs in the United States. NDATUS includes questions on types of care provided, client count and capacity, client demographic characteristics, specialized programs, funding amounts and sources, staffing, and waiting lists. It obtains point-prevalence information on treatment utilization (program service data for active clients in treatment on a single predetermined calendar day each year) and annualized information on service delivery to target client populations, such as pregnant women and HIV-positive clients.

The National Treatment Improvement Evaluation Survey (NTIES) (Center for Substance Abuse Treatment 1993), funded by the Center for Substance Abuse Treatment, is more intensive and includes two utilization components conducted in treatment programs selected to be representative of the national treatment system. First, NTIES conducted a detailed examination of the scope of program services, and then programs

have been required to report utilization data on a monthly basis over a multiyear period.

Each State is required to implement a management information system to collect ongoing client characteristic and service delivery data. For example, the Maryland Substance Abuse Management Information System obtains monthly reports on each client admitted to and discharged from treatment during the reporting period. These client-level data include demographics, substance use characteristics, and psychosocial functioning at treatment entry and discharge. In addition, programs are required to report admission and discharge dates; units of service for individual, group, and family counseling sessions; and number of urinalyses conducted. This system also compiles program-level data on waiting list volume as a function of treatment modality. In recent years, some State alcohol and other drug agencies also have developed management information systems specifically to examine the number of pregnant women and pregnancy outcomes of drug-dependent women in the treatment system. Such systems can provide basic feedback to individual programs on aspects of operation, such as client retention, mean number of sessions per client, and changes in client psychosocial functioning from pretreatment to posttreatment. This information allows programs to assess compliance with internally established program standards of care as well as track outcome trends over time. Thus, most programs have access to basic information on program utilization as a function of their mandated participation in these Federal and State reporting systems.

Program-Level Utilization Data

These required program monitoring systems can serve as the foundation on which more sophisticated program operation and client care monitoring systems can be built. Total quality management programs and continuous quality improvement monitoring have been useful for focusing attention on the need for more sophisticated data collection strategies to identify specific opportunities for program enhancement. The variety of quantitative measures described above can be used to enrich the basic mandated service delivery measures. In addition, measures can be combined or examined in novel ways to increase the meaningfulness of the resultant information. For example, as described above, rather than a simple count of the number of individual counseling sessions as required by the State reporting system, analysis can be made of patterns of session attendance and the percentage of scheduled sessions that were kept by the client. Although requiring little additional effort, such strategies can yield much more meaningful information on client participation and retention in treatment.

Recently, standardized tools have been developed to capture client feedback on perceived quantity and utility of program services. For example, the Treatment Services Reveiw (McLellan et al. 1992) is a brief, semistructured interview that elicits service information in the seven domains examined in the ASI (McLellan et al. 1980) and is included in most comprehensive individualized treatment plans. These domains are medical, employment/ vocational, alcohol, drug, legal, family/social, and psychological status. Within each domain, clients report on quantity of services received since the last interview and then rate perceived helpfulness of these services. This combined quantitative and qualitative approach can provide programs with expanded feedback on service delivery levels and client responses to these services. Client ratings of service utility can provide important information for program planning of treatment expansion or in meeting the needs of special populations. For example, pregnant women might be expected to rate onsite medical care as more useful than would the population of young men traditionally served by drug treatment programs.

Other aspects of program operation that already are monitored routinely and may be readily available to incorporate into utilization analyses include program billing records, pharmacy order records, medication dispensing logs, urinalysis logs, and referral records.

Counselor-Level Utilization Data

Several studies have demonstrated that, within a given treatment program, there can be considerable variability among addiction counselors in their ability to retain clients in treatment (Rosenburg et al. 1976; Valle 1981). McLellan and colleagues (1988) also have reported variability across counselors for within-treatment client measures such as the amount of the daily methadone dose, employment status, and utilization of supportive medical services in a methadone maintenance setting. Within the authors' women's treatment clinic, there are many differences among counselors in maintaining subject participation as measured by treatment duration and discharge status. Over a 1-year period (July 1992 through June 1993), the percentage of subjects who complied with program attendance standards ranged from 40 to 100 percent across counselor caseloads. Similarly, the percentage of subjects in compliance with clinic morning arrival times ranged from 58 to 100 percent across counselor caseloads. Such divergence may reflect several factors operating at both the counselor and program levels. Counselor variables may include education and experience, theoretical orientation, and therapeutic style. Program factors may include targeted assignment of more challenging, specialized caseloads (e.g., dually diagnosed clients) and caseload volumes. Aggregating service utilization data for each counselor can begin to provide information on the

potential effect of these counselor and program variables and may point to important areas for individual training or program improvement.

Subject-Level Utilization Data

The following data will be used to illustrate how the level of analysis can dramatically affect outcome findings. The data were abstracted from subject records of an intensive outpatient drug treatment program that specializes in the care of women. The program was one of the sites participating in the NIDA Perinatal-20 Treatment Research Demonstration Program.

Subject A was a 29-year-old Caucasian female who was referred for her first treatment episode by a community health center. The subject was unemployed, lived with her significant other and their children, and reported no significant psychiatric problems. Subject A denied any arrests in the 2 years prior to treatment enrollment. Substance use diagnoses included alcohol, heroin, and cocaine dependence. The subject remained in treatment for approximately 4 1/2 months and was discharged prior to completing the first and most intensive phase of treatment because of lack of attendance.

Subject B was a 30-year-old African-American female who was referred for her third treatment episode by the attending physician who had treated her during a recent hospitalization. She was unemployed and living with her children. She reported a prior history of psychiatric treatment and admitted to three arrests in the 2 years prior to treatment enrollment. Substance use diagnoses included cocaine and alcohol dependence. This subject remained in the first phase of treatment for approximately 5 1/2 months and then was transferred to less intensive treatment programming.

Treatment utilization data for these two subjects are summarized in table 1. If treatment utilization is examined at the macrolevel (e.g., length of stay), the two women appear similar, with Subject B remaining in treatment only 1 month longer than Subject A. However, if treatment utilization is examined at the microlevel in conjunction with other dependent variables, a somewhat different picture emerges. For example, status at discharge shows that Subject A terminated treatment unsuccessfully, whereas Subject B transferred successfully to the second and less intensive phase of treatment.

Additional information is obtained by a more detailed examination of treatment attendance data. Subject A had 58 days with face-to-face treatment contact, whereas Subject B had 87 days of program contact.

TABLE 1.   *Treatment utilization data for two representative subjects enrolled in Perinatal-20 treatment services*

Measure	Subject A	Subject B
Length of stay (months)	4.5	5.5
Number of treatment days (face-to-face contact)	58	87
Number of days with ontime clinic arrival	25	48
Number of individual counseling sessions	31	25
Number of group counseling sessions	270	98
Percent positive drug toxicologies	75	48
Discharge status	Dropout	Service transfer

Subject B also was somewhat more likely to arrive on time at the treatment program (55 percent ontime attendance) compared with Subject A (43 percent ontime attendance).

When treatment contact (i.e., number of individual and group counseling sessions attended) is examined, a different pattern emerges. Specifically, despite fewer days in attendance, Subject A participated in more individual counseling sessions than Subject B.   For group counseling, the difference is more dramatic, with Subject A attending nearly three times as many groups as Subject B.

These data may seem somewhat contradictory. Subject A received more treatment than Subject B, yet Subject A was unsuccessfully discharged from the program and Subject B was transferred to less intensive treatment programming after successfully completing the first phase of treatment. Nevertheless, they typify the diversity of outcomes that are seen in substance abuse treatment programs. The example also illustrates the difficulty in selecting the most appropriate measure to use in evaluating treatment outcomes because different measures can suggest different results.

CONCLUSION

Clearly, there has been substantial progress in the number, scope, and quality of substance abuse treatment outcome evaluations over the past several decades. Treatment researchers are developing highly sophisticated scales to describe and measure the components, content, and integrity of therapeutic interventions. It is likewise critical that researchers develop more sophisticated strategies for measuring treatment participation and retention. As this chapter illustrates, utilization measures can be inexpensive to collect and often are readily available within mandated treatment reporting systems. These measures can be examined

differently or supplemented in small but meaningful ways to yield far more precise and informative measures of program effectiveness. Such detailed measurement of service utilization will become increasingly important with the growing emphasis on cost-effectiveness of care.

It also is important to remember the utility of these measures as both independent and dependent variables. For example, numerous earlier studies demonstrated a positive relationship between the number of treatment visits and postdischarge treatment outcome. Because few treatment programs are able to afford extensive posttreatment followup of program clients, the number of treatment visits and length of retention can become an inexpensive surrogate dependent measure for determining the effects of a change in program service delivery on client outcomes. Clients often communicate important information on the quality and utility of treatment services through the extent of their attendance and participation in these services. In the face of increasing demands from regulatory agencies, insurance payers, and treatment clients, it will become even more important to have well-established, routine strategies for utilization monitoring at the program, counselor, and client levels.

REFERENCES

Butynski, W. Drug treatment services: Funding and admissions. In: Pickens, R.W.; Leukefeld, C.G.; and Schuster, C.R., eds. *Improving Drug Abuse Treatment*. National Institute on Drug Abuse Research Monograph 106. DHHS Pub. No. (ADM)91-1754. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1991.

Center for Substance Abuse Treatment. *National Treatment Improvement Evaluation Study. Project Summary*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment, 1993. 8 pp.

Center for Substance Abuse Treatment. *Intensive Outpatient Treatment for Alcohol and Other Drug Abuse*. Treatment Improvement Protocol (TIP) Series, No. 8. DHHS Pub. No. (SMA)94-2077. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment, 1994. 104 pp.

Horgan, C.; Rosenback, M.; Ostby, E.; and Butrica, B. Targeting populations with drug abuse problems: Pregnant women. In: Kaple, J.M., ed. *NIDA Drug Abuse Services Research Series: Background Papers on Drug Abuse Financing and Services Research. Volume 1*. DHHS Pub. No. (ADM) 91-1777. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1991.

Hubbard, R.L.; Marsden, M.E.; Rachal, J.V.; Harwood, H.J.; Cavanaugh, E.R.; and Ginzburg, H.M. *Drug Abuse Treatment: A National Study of Effectiveness*. Chapel Hill, NC: University of North Carolina Press, 1989. 213 pp.

James, M.E.; Rubin, C.P.; and Willis, S.E. Drug abuse and psychiatric findings in HIV-seropositive pregnant patients. *Gen Hosp Psychiatry* 13:4-8, 1991.

Lex, B. Some gender differences in alcohol and polysubstance users. *Health Psychol* 10:121-132, 1991.

Marsh, J.C., and Miller, N.A. Female clients in substance abuse treatment. *Int J Addict* 20:995-1019, 1985.

McCaul, M.E.; Svikis, D.S.; and Feng, T. Pregnancy and addiction: Outcomes and interventions. *Md Med J* 40:995-1001, 1991.

McLellan, A.T.; Alterman, A.I.; Cacciola, J.; Metzger, D.; and O'Brien, C.P. A new measure of substance abuse treatment: Initial studies of the Treatment Services Review. *J Nerv Ment Dis* 180(2):101-110, 1992.

McLellan, A.T.; Luborsky, L.; Woody, G.E.; and O'Brien, C.P. An improved diagnostic evaluation instrument for substance abuse patients: The Addiction Severity Index. *J Nerv Ment Dis* 168(1):26-33, 1980.

McLellan, A.T.; Woody, G.E.; Luborsky, L.; and Goehl, L. Is the counselor an "active ingredient" in substance abuse rehabilitation? An examination of treatment success among four counselors. *J Nerv Ment Dis* 176:423-430, 1988.

National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism. *National Drug and Alcoholism Treatment Unit Survey (NDATUS) 1991: Main Findings Report*. DHHS Pub. No. (SMA)93-2007. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Substance Abuse and Mental Health Services Administration, 1993. 99 pp.

Olkin, R., and Lemle, R. Increasing attendance in an outpatient alcoholism clinic: A comparison of two intake procedures. *J Stud Alcohol* 45:465-468, 1984.

Polich, J.M.; Armor, D.J.; and Braiker, H.B. *The Course of Alcoholism: Four Years After Treatment*. Santa Monica, CA: The Rand Corporation, 1980. 361 pp.

Price, R.H.; Burke, A.C.; D'Aunno, T.A.; Klingel, D.M.; McCaughrin, W.C.; Rafferty, J.A.; and Vaughn, T.E. Outpatient drug abuse treatment services, 1988: Results of a national survey. In: Pickens, R.W.; Leukefeld, C.G.; and Schuster, C.R., eds. *Improving Drug Abuse Treatment*. National Institute on Drug Abuse Research Monograph 106. DHHS Pub. No. (ADM)91-1754. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1991.

Prochaska, J.O.; DiClemente, C.C.; and Norcross, J.C. In search of how people change: Applications to addictive behaviors. *Am Psychol* 47:1102-1114, 1992.

Rosenburg, C.N.; Gerrein, J.R.; Mandhar, V.; and Leetick, J. Evaluation of training of alcoholism counselors. *J Stud Alcohol* 37:1236-1246, 1976.

Simpson, D.D., and Sells, S.B. Effectiveness of treatment for drug abuse: An overview of the DARP Research Program. *Adv Alcohol Subst Abuse* 2:7-29, 1982.

Valle, S.K. Interpersonal functioning of alcoholism counselors and treatment outcome. *J Stud Alcohol* 42:783-790, 1981.

Wanberg, K.W., and Jones, E. Initial contact and admission of persons requesting treatment for alcohol problems. *Br J Addict* 68:281-285, 1973.

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