Reconsidering the evaluation of addiction treatment: from retrospective follow-up to concurrent recovery monitoring

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ABSTRACT

Historically, addiction treatments have been delivered and evaluated under an acute-care format. Fixed amounts or durations of treatment have been provided and their effects evaluated 6–12 months after completion of care. The explicit expectation of treatment has been enduring reductions in substance use, improved personal health and social function, generally referred to as 'recovery'. In contrast, treatments for chronic illnesses such as diabetes, hypertension and asthma have been provided for indeterminate periods and their effects evaluated during the course of those treatments. Here the expectations are for most of the same results, but only during the course of continuing care and monitoring. The many similarities between addiction and mainstream chronic illnesses stand in contrast to the differences in the ways addiction is conceptualized, treated and evaluated. This paper builds upon established methods of during-treatment evaluation developed for the treatment of other chronic illnesses and suggests a parallel evaluation system for out-patient, continuing-care forms of addiction treatment. The suggested system retains traditional patient-level, behavioral outcome measures of recovery, but suggests that these outcomes should be collected and reported immediately and regularly by clinicians at the beginning of addiction treatment sessions, as a way of evaluating recovery progress and making decisions about continuing care. We refer to this paradigm as 'concurrent recovery monitoring' and discuss its potential for producing more timely, efficient, clinically relevant and accountable evaluations.

KEYWORDS Addiction, monitoring, outcomes, recovery, treatment.

INTRODUCTION

Post-treatment outcome evaluation has been the traditional method of assessing the performance and accountability of addiction treatments since the 1970s. Indeed, virtually all outcome evaluations of addiction treatments have contacted patients one or two times following discharge to measure socially important behaviors such as return to drug use, employment and crime (see Emrick 1975; Armor, Polich & Stambul 1976; Hubbard *et al.* 1989; Gerstein & Harwood 1990; Ball & Ross 1991; McLellan *et al.* 1993a,b; Finney, Hahn & Moos 1996; Project MATCH 1997; Simpson *et al.* 1997, 2002). These evaluations are expensive and difficult to conduct, requiring well-trained personnel and close supervision to attain representative follow-up rates (see Moos, Finney & Cronkite 1990; McLellan & Durell 1995; Scott & White 2004). None the less, when conducted properly the results provide a definitive answer to the question: 'How long do positive changes last following discharge?'.

Note that this question assumes that positive changes have occurred by the end of the treatment episode (discharge). This is a reasonable assumption in the case of

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residential or in-patient treatment, where drugs are not available in the treatment environment and over 75% of patients admitted to residential treatments continue to the point of planned discharge (SAMHSA 1997). Thus, post-treatment follow-up evaluations of residential treatments have made conceptual sense and because most of those followed post-treatment have had a reasonable 'dose' of treatment, their results are a reasonable estimate of treatment effects.

However, there have been significant changes in health-care delivery over the past two decades. Like most other parts of contemporary health-care, the great majority of addiction treatment (over 90%) is now delivered in out-patient settings (McKusick *et al.* 1998; SAMHSA 2002a; McLellan, Carise & Kleber 2003). This fact is important, because in out-patient settings it cannot be assumed that patients are abstinent or even making progress during treatment, and significant numbers of patients drop out from out-patient treatment prior to a planned completion point. Thus, it seems that the most appropriate evaluation questions for contemporary out-patient treatments include: 'Are patients actively participating in treatment, reducing their drug use, improving their health and social function, and reducing threats to society?'. These questions are even more important, because so many patients are referred to treatment due to addiction-related social problems such as crime, unemployment or infectious disease (see McLellan & Weisner 1996).

To respond to the changing treatment delivery scene, to the public's need for more accountability and greater effectiveness and to the practitioner's need for more economical, rapid and clinically relevant information to guide decision making, this paper proposes an alternative method of evaluating the effectiveness of out-patient alcohol and drug abuse treatments. We refer to this as 'concurrent recovery monitoring' (CRM) because it captures the traditional outcome measures that have come to define recovery and because the measures are repeated regularly, concurrent with treatment to monitor and assist patient change. There are two major advantages to this approach:

1 For researchers and policy makers, more accurate and efficient evaluation of out-patient treatment to represent patient change toward clinically and socially desirable outcomes (e.g. abstinence, employment, no crime, etc.) more effectively.
2 For clinicians and clinical supervisors, more clinically relevant information in a timely manner and at the individual patient level to inform clinical decisions more effectively.

Other advantages include reduced cost of administration, added accountability and greater comparability to evaluations in other forms of mainstream health-care (see Wagner, Austin & Von Korff 1996; Lambert *et al.* 2001; Bodenheimer, Wagner & Grumbach 2002).

The paper is presented in four parts. We discuss first the measurement domains proposed in a CRM system. Part 2 provides a more complete conceptual and procedural rationale for the CRM approach. Part 3 compares CRM with other contemporary evaluation methods, while Part 4 provides examples of how the CRM model would be implemented in standard practice.

PART 1: WHAT ARE REASONABLE OUTCOME EXPECTATIONS FOR ADDICTION TREATMENTS?

We have argued previously (McLellan & Weisner 1996; McLellan & McKay 1998) that the first step toward developing methods and systems to promote treatment effectiveness and accountability is to determine what would make treatment valuable and worthwhile. Because addiction can affect many others beyond the identified patient, and because these 'affected others' are often asked to contribute to the treatment of addiction, many different parts of society have legitimate expectations of addiction treatments. Here we examine briefly some of these expectations as a prelude to the suggested measures of the effectiveness of addiction treatments.

For the patient, and particularly for the many treatment stakeholders in society, 'effectiveness' of addiction treatment is measured in large part by its ability to reduce the 'addiction-related' problems that often limit personal function in the patient, that may have been costly to the health-care system and/or may have become a public health concern to society (see McLellan & Weisner 1996; McLellan & McKay 1998). Typically, the immediate goal of reducing alcohol and drug use is necessary but rarely sufficient for the achievement of the longer-term goals of improved personal health and social function and reduced threats to public health and safety—i.e. recovery. One primary evaluation criterion is patient attendance and participation in treatment, as this is a necessary first step toward the achievement of four outcome domains that have traditionally been relevant to both the patient and to society, as follows.

1 Reduction in alcohol and drug use. This is the foremost goal of all substance abuse treatments and success in this area may set the stage for other improvements.
2 Increases in personal health. Improvements in medical and psychiatric health are important quality-of-life indicators for the patient and are associated with reductions in inappropriate utilization of the health-care system (e.g. emergency room use).
3 Improvements in social function. Improvements in employment, family and social relationships are

important to society but are also related to prevention of relapse.

4 Reductions in threats to public health and safety. Behaviors that spread infectious diseases or that are associated with personal and property crimes are threats to public health and safety.

In this regard much of what is expected of addiction treatment is also expected of treatments for other illnesses. Patient compliance or adherence with the treatment regimen is a standard measure of treatment viability in mainstream health care. Beyond this measure of patient participation, reductions in primary symptoms (alcohol and drug use) and improved personal health and social function are virtually identical with the 'primary and secondary measures of effectiveness' used typically by the Food and Drug Administration (FDA) to evaluate new drugs or devices proposed for other illnesses (FDA 1980; Stewart & Ware 1989). The outcome domain of public health and safety is not as important in many other illnesses but is pertinent to the evaluation of infectious diseases and to some other behavioral illnesses.

It is also important to emphasize that most of the social expectations of the stakeholders are reasonably consonant with the personal goals of most affected patients, and with the clinical goals of most addiction treatment programs. The majority of patients and programs can agree that stopping substance use, obtaining/keeping a job and eliminating crime are legitimate, achievable goals. This means that treatment providers should be willing to accept responsibility and accountability for achieving and maintaining these goals in their patients—at least during active treatment. Indeed, if patients and programs cannot be expected to achieve these goals even during treatment, it is reasonable to question the value of treatment for either the patient or society.

PART II: CHANGES IN ADDICTION TREATMENT CONCEPT AND DELIVERY

Traditional concepts of addiction treatment and outcome evaluation

For the past 30 years most of the societal expectations regarding substance abuse treatment revolved around a very simple rehabilitation-oriented model. Despite significant differences among clinicians in whether they conceptualized addiction as a disease, a bad habit or a sin (Musto 1973; White 1998), virtually all therapeutic perspectives have assumed that some finite amount, duration or intensity of therapies, medications and services should be adequate to cause a patient to 'learn his lesson', 'achieve insight' and especially 'change his ways'. The explicit expectation has been that once the patient had been successfully treated, she or he would be ready for discharge and be expected to continue in recovery for a substantial period of time—at least 6–12 months.

While some readers may view this as an extreme presentation of the rehabilitation position, the methods used to evaluate the effectiveness of addiction treatment offer no other interpretation. Indeed, the expectation that benefits should be attained during treatment and sustained following treatment is clearly evident by the universally applied convention of evaluating the outcomes of treatment through measurement of patient performance 6–12 (or more) months following treatment discharge (see McLellan *et al.* 1983, 1993a,b; Hubbard *et al.* 1989; Gerstein & Harwood 1990; Finney, Hahn & Moos 1996; Project MATCH 1997; Simpson *et al.* 1997, 2002; Gossop *et al.* 2001). While many of these evaluations have also measured patient changes during treatment and during-treatment processes (see Hubbard *et al.* 1989; Finney *et al.* 1996; Simpson *et al.* 1997; Hser *et al.* 1998; Simpson, Joe & Brown 1997), it is fair to say that the primary emphases and the major conclusions regarding treatment effectiveness have all been based on post-treatment outcomes.

Given the expectations for sustained improvements in the four evaluation domains described previously, it is understandable why the public has been generally disappointed with addiction treatments. In fact, most alcohol- and drug-dependent patients relapse following cessation of treatment (see Miller & Hester 1986; Institute of Medicine 1998; McLellan 2002). In general about 50–60% of patients begin re-using within 6 months following treatment cessation, regardless of the type of discharge, the patient characteristics or the particular substance(s) of abuse (Hunt, Barnett & Branch 1971; Hubbard *et al.* 1989; Finney *et al.* 1996; Simpson *et al.* 1997; Anglin *et al.* 1997; Hser *et al.* 1998; Institute of Medicine 1998; McKay *et al.* 1999, 2004). Of course, one interpretation of this statistic is that the available treatments are ineffective.

Conceptual changes regarding addiction and addiction treatment

Anglin and colleagues have suggested that it is more reasonable to consider an addiction career trajectory than to simply examine the effects of one treatment episode (see Anglin *et al.* 1997; Hser *et al.* 1997, 1998). Other researchers have looked to other areas of medicine and health to explain why addictive disorders have seemed so resistant to treatment. Reviews of treatments for chronic illnesses such as hypertension, diabetes and asthma were initiated to examine whether methods used in the treatment of those diseases might provide insights into the

treatment of addiction (Lewis 1996; O'Brien & McLellan 1996; McLellan *et al.* 2000). While the similarities between addiction and other chronic illnesses can be debated, there is no doubt that alcohol and drug addiction are quite different in the ways they are treated and evaluated.

Specifically, treatments for hypertension, diabetes and asthma are not time-limited, nor do they employ fixed amounts or intensities of medications or services. This is because there is wide acceptance of the fact that there are no cures for these conditions. Instead, treatments for these conditions are continuing, with the intensity of care and monitoring modulated by the severity of the symptoms present (see Wagner *et al.* 1996; Bodenheimer, Wagner & Grumbach 2002). Evaluators charged with determining the effectiveness of these interventions do evaluate patients' illness symptoms, general health and social function, but only during the course of the treatment, as discharge from treatment is expected to produce relapse in most cases. Similarly, psychotherapists charged with treating and evaluating mental illnesses such as depression, anxiety and phobia have also developed and refined during-treatment measures of symptom change and patient functional status that they use at each out-patient session to evaluate simultaneously the effects of prior care and to make clinical decisions about future care (see Lambert & Brown 1996; Lambert *et al.* 2001).

It is important to stress that not all cases of alcohol or other drug use disorder require chronic care. Many individuals are able to function very well with little or no treatment (see Winick 1962; Orleans *et al.* 1991; Sobell *et al.* 1996; Toneatto *et al.* 1999). None the less, there are well-publicized relapse rates following self-initiated and treatment-assisted attempts to control addiction (see Miller & Baca 1983; Robins 1993; Lichtenstein *et al.* 1996). In fact, within the large national Drug Abuse Treatment Outcome Study (DATOS), about half of all subjects were readmissions to treatment, slightly more than half (54%) of them relapsed within 2 years and 44% returned to treatment within 3 years of the index admission (see Grella *et al.* 2003). While it is well known that longer treatment episodes predict better outcomes (see Simpson 2004 for a review), it is also well known that those who have had more than one prior admission and/or significant co-occurring psychiatric and social pathologies are at much higher risk for relapse and return to treatment (NIDA 1999; SAMHSA 2002a,b). If these relapsing individuals have a chronic form of addiction, then significant improvements in the substance use, health and social function for them may only be expectable while they are in some form of treatment or continuing mutual-help care such as Alcoholics Anonymous (AA) or Narcotics Anonymous (NA).

Changes in the addiction treatment delivery system

Beyond changes in the concept of addiction, there have also been changes over the past 15 years in the way addiction treatment is delivered (Horgan & Merrick 2001). Specifically, there has been a significant movement from treatment in primarily residential settings to predominantly out-patient care. As recently as the beginning of the past decade, over 50% of substance abuse treatments were delivered in some form of residential (hospital or non-hospital) care; by 1996 about 60% of addiction treatment programs were out-patient; and by 2002, more than 85% of all substance abuse treatment was provided in an out-patient setting (SAMHSA 1997, 2002a; McKusick *et al.* 1998).

As discussed previously, this shift toward out-patient treatment is important for the concept and conduct of evaluations because the evaluation questions for residential and out-patient treatments are quite different. The fact that treatment is often in lieu of punishments such as incarceration, job loss or reduction of welfare benefits brings even greater importance to the during-treatment performance of these coerced patients. In this context, it is worth noting that most of the major referral systems (e.g. corrections, welfare, employment, mental health) also take a continuing-care approach to addressing their target problems—only addiction treatment has been expected to resolve the target problem in a finite (short) time-frame.

PART III: COMPARING CRM WITH OTHER EVALUATION APPROACHES

There has been broad interest in the evaluation of addiction treatment effectiveness by payers, regulators, policy makers and the public at large (Beutler 2001). In turn there has been a proliferation of evaluation methods and approaches. Here we describe three of these prior to a more in-depth discussion of the CRM approach. The reader is also referred to two other comparative reviews of evaluation methods for more detail (see Beutler 2001; McLellan 2002).

Post-treatment follow-up

This traditional method of evaluating the effectiveness of addiction treatment has been discussed earlier in the paper. This model has been the gold standard of methods to evaluate substance abuse treatment effectiveness for the past 30 years and there are good scientific reasons for this stature. First, most post-treatment outcome evaluations actually begin with the collection of standardized patient status information at admission on each of the

areas that will be evaluated ultimately as outcomes after discharge. This permits the evaluation of improvement as well as outcome status. Secondly, most of these evaluations involve 'intent to treat' analyses where patients are sampled at admission from those patients the program 'intended to treat'. These samples are then followed during and after treatment and included in all subsequent analyses, regardless of whether or not they drop out of treatment prior to planned completion. This enables the evaluation of whether the treatment was effective in engaging and retaining the patients it intended to treat, as well as an overall estimate of effectiveness. Thirdly, most of the better post-treatment outcome evaluations have contacted successfully representative samples of the patients treated (greater than 70%), collected standardized measures in all the outcome domain areas suggested previously and used methods to verify and validate those outcomes (e.g. urine testing, employment records, arrest records, etc.) (see Hubbard *et al*. 1989; Gerstein & Harwood 1990; McLellan *et al*. 1993a,b; Finney, Hahn & Moos 1996; Project MATCH 1997; Simpson *et al*. 1997, 2002; Gossop *et al*. 2001). The ultimate benefits from these studies are clear: validated, patient-level information on standard outcomes that are important for the patient, the provider, the policy maker and the public at large.

Post-treatment follow-up evaluations share many basic assumptions with CRM. Both approaches assume that the evaluation domains are measurable through clinically relevant patient behaviors; that those behaviors are expected to change as a result of treatment efforts; and most importantly, that it is possible to obtain accurate estimates of the effectiveness of a treatment intervention or treatment unit (e.g. program, case-load, etc.) through the measurement of the evaluation domains in samples of patients who received the focal intervention.

There are, however, important differences between CRM and post-treatment follow-up methods of evaluation. First there is the procedural difference of measuring outcomes several times during treatment, rather than once or twice following treatment. Also, in traditional post-treatment follow-up evaluations, the evaluator is typically an external researcher purposely independent from the treatment team. In contrast, the 'evaluator' in a CRM system is likely to be the treating clinician or practitioner, because the outcomes measured also provide clinically relevant information for managing individual patients. Of course, the concept of clinician as evaluator introduces issues of bias that require external auditing particularly if the resulting data are to be used for performance contracting, program evaluation or research. These issues are discussed later in the paper.

As also indicated earlier, post-treatment follow-up studies involve methodological sophistication, as well as significant amounts of time and resources to track, locate and interview patients (see Scott & White 2004). Because of the significant labor and expense, these types of evaluation are most appropriate as research studies and can rarely be incorporated into standard operating procedures for most treatment providers. The time required to complete these evaluations also prevents the data from being fed back in a time-frame that is useful in making care decisions on individual patients.

The post-treatment follow-up evaluation methods are unsurpassed for answering the question of 'how long do treatment benefits last' and 'what is the level of adjustment among those who receive little or no treatment?'. However, there is also need for rapid, clinical and policy relevant information about the ability of contemporary treatments to initiate and sustain personal health and social improvements. Here we see an advantage for CRM.

In addition to its continuing role in evaluating hospital and residential treatment episodes, we believe the most appropriate use of post-treatment follow-up procedures in an out-patient context would be to follow groups of patients who have left active care after attaining some prespecified behavioral changes acquired during treatment (e.g. 3 months' verified abstinence, re-unification with children, met five or more times with an AA sponsor, etc.) or who have completed prespecified time or attendance requirements (e.g. completed driving while intoxicated (DWI) school, received 12 weekly doses of a new cocaine craving medication, graduated from out-patient treatment, etc.). Follow-up outcomes on such groups will continue to inform on the duration of benefits and their course of attrition.

Enhancements to post-treatment follow-up

In addition to the recognized benefits to policy makers and payers from post-treatment follow-up results, there has also been recognition that the act of contacting patients in post-treatment follow-up evaluations often has clinical value for those patients contacted. For example, the repeated follow-up contacts by research technicians during Project MATCH are widely credited with preserving the relatively good performance of patients in all treatment groups (Project MATCH 1997). Systematic studies of post-treatment follow-up contacts as therapeutic interventions have been undertaken recently by several investigative groups. Stout and colleagues at Brown have reported improved post-treatment outcomes at 1 year post-treatment among a group of alcohol-dependent patients who receive multiple post-treatment evaluation contacts via telephone; they refer to this practice as 'Extended Case Monitoring' (Stout *et al*. 1999). Similar

efforts were described more than 15 years ago by Osher to prevent relapse among seriously ill substance-dependent patients (see Osher *et al.* 1985). More recently, the Lighthouse group in Illinois combined evaluation contacts with post-treatment follow-up appointments in a procedure they refer to as 'Recovery Check-Ups' (see Godley *et al.* 2002; Dennis *et al.* 2003). These investigators have reported that these contacts have led to the early detection of use and remotivation for out-patient care, forestalling escalation of abuse and the attendant social and medical problems.

The CRM procedure suggested here borrows heavily from these prior 'enhanced follow-up' efforts. Like these researchers, we too endorse the combination of evaluation and clinical monitoring, the value of multiple measurement points and the measurement of traditional outcome domains. The difference is that the CRM approach is not designed simply for post-treatment evaluation, but rather for initiation at the beginning and at multiple times throughout the course of out-patient treatment.

Performance monitoring

Performance monitoring forms of evaluation such as the continuous quality improvement (CQI) paradigms have been in wide use by industry to enhance the efficiency and quality of products or services (see Deming 1952) and are often required in the health-care field (see JCAHO 2002). More recently, the Washington Circle Group has demonstrated the use of administrative information typically collected by treatment systems or treatment programs as performance monitoring criteria (see Garnick *et al.* 2002). In fact, the National Council on Quality Assurance (NCQA) has proposed that all accredited programs monitor and report these Washington Circle performance indicators (NCQA 2004) At the treatment system level, these performance monitoring criteria have been shown to capture the clinically important goals of engaging patients into treatment and transitioning them from more intensive forms of care (e.g. detoxification) to less intensive forms of care (e.g. intensive and traditional out-patient treatment) (see Garnick *et al.* 2002).

Within health-care settings CQI and other performance improvement procedures use repeated, real-time data collected by the clinician or administrative staff as the essence of their measurement approach. One significant difference between this method and the post-treatment evaluation method is that data are collected on cases during the course of treatment rather than following discharge. An important—indeed, essential—aspect of the performance monitoring approach is the regular reporting of results back to the relevant stakeholders involved in the service delivery process, including those who collected the original data. Typically, this 'performance feedback' is presented graphically in a manner that allows both the administrator and the clinician to know whether performance on the criterion measure has improved. Thus, the performance monitoring approach is an explicit attempt to improve clinical activity within a short time-frame, while the post-treatment follow-up method is designed to evaluate the enduring impact of treatment.

There are other important procedural differences between the performance monitoring and the post-treatment follow-up methods. First, most CQI and other performance monitoring approaches do not focus on patient-level behaviors. Instead, these approaches identify procedural 'indicators' derived from treatment program, treatment system or health plan data in procedural or administrative databases. This means that evaluation results may be relevant at the program or health-plan levels of organization but the information will not necessarily be pertinent at the level of the individual patient or even the individual clinician. Further, the measures or 'indicators' used in CQI and other performance monitoring approaches focus typically on processes of the treatment delivery (e.g. waiting-time for appointments, linkage between stages of care) and patient satisfaction; usually not the outcome measures described earlier in this paper.

Patient-focused evaluation

A more recent approach to evaluation, developed in the measurement of psychotherapy's effects, includes many of the procedures found in both post-treatment follow-up and performance monitoring (see Howard *et al.* 1996; Lambert & Brown 1996; Lambert *et al.* 2001). This approach was designed to be used by psychotherapists to manage patients more effectively during the course of out-patient psychotherapy. Once again, the goal is to provide meaningful feedback at the individual patient level that can be used by the therapist, who is also the person collecting the information. The data for the patient-focused evaluation are collected at the beginning of each session to provide an immediate indication of whether the antecedent sessions and homework have led to improvement. Because the clinician in this case is also the evaluator, feedback is immediate and the data can be (are designed for) used in adjusting the course of care. The specific criteria or indicators collected at each session are practically and theoretically derived composite measures of subjective discomfort (symptoms), quality of relationships and social role performance during the period since the last session. These are widely used, reasonably standard measures that are easy to collect and interpret, but

are also sensitive to change and indicative of functional status in general psychotherapy patients.

PART IV: DESCRIPTION OF THE CONCURRENT RECOVERY MONITORING APPROACH

In many ways, the CRM model represents the blending of the measurement domains from traditional post-treatment outcome evaluation (see Finney, Hahn & Moos 1996; Project MATCH 1997; Gossop *et al.* 2001; Simpson 2004) with the measurement practices and rapid feedback features of the performance monitoring (see Deming 1952; McGlynn 1998; JCAHO 2002) and the patient-focused evaluation models (Howard *et al.* 1996; Lambert & Brown 1996; Lambert *et al.* 2001).

We envision a functioning CRM system within addiction treatment programs, operating in a similar way to systems that now operate in out-patient medical treatments for hypertension or in office-based psychotherapy for depression. Two of the first tasks for a nurse or medical technician in a primary care office charged with the management of a patient with hypertension are checking vital signs including blood pressure. These measures are relatively easy to collect and are simultaneously important for the evaluation of the care that has gone before and for clinical guidance of next steps. Similarly, in the patient-focused practices suggested by Lambert and colleagues (Lambert *et al.* 2001) in psychotherapy, a therapy session begins with the therapist's collection of a brief set of symptom and patient status measures that again serve the simultaneous functions of evaluating the care that has preceded and providing clinical guidance for future care.

An example of CRM in the addiction treatment setting

The proposed monitoring system assumes (1) an ongoing relationship between the patient and the provider or clinician; and (2) that the patient will not be confined during treatment and will thus be capable of exhibiting both positive and negative behaviors that can change between sessions of care. Thus, the proposed CRM system is best suited for patients in any form of out-patient treatment including intensive out-patient (IOP) or traditional out-patient (OP) and methadone or other medication maintenance forms of care. It would also be suitable for office-based treatments such as those provided by private therapists or physicians. Some halfway houses, recovery houses and even some therapeutic communities may have the type setting where CRM would be appropriate, but only under conditions where the focal behaviors can change.

To illustrate how CRM would actually work, we suggest that at least once per week for patients in IOP or early methadone maintenance and perhaps once per month for patients in OP or later phases of medication maintenance treatments, each patient would report his/her clinically relevant symptoms and status using a paper and pencil computer system prior to the start of their treatment session. The entire data collection should require no more than 5 minutes per patient.

If these reports were collected through a computerized clinical information system, then all the suggested measures would be immediately available to both the counselor and the patient, displayed in a graph illustrating progress or deterioration over the course of treatment. This type of report should be helpful within the treatment session for clinical care planning. At later points the individual patient measures could also be aggregated by counselor or patient category (e.g. cocaine patients by gender; cocaine patients, by gender, by time in treatment, etc.) for the clinical supervisor or clinic director to assist clinical supervision and program planning. Finally, these same measures could be aggregated at the program or treatment system level and forwarded to payers and policy makers for the purposes of accountability.

Again, we recommend measures from the four traditional outcome domains described earlier. For example, within the alcohol use domain the simple questions 'How many days in the past month/week have you drunk alcohol' and 'How many of those days did you have five or more drinks (four if a woman)' will provide a clinically relevant indication of status in this area. As these measures have been used in a wide range of outcome studies, comparisons could be made readily with benchmark data from the existing research literature. In the employment and self-support domain, questions such as 'How many days in the past month/week did you work' also offer a rapid and valid indication of patient status toward the goal of self support. There are other, similar self-report items that address symptoms and status in the other domains that have been validated in many prior outcome studies, and that could also provide important subject matter for group or individual counseling sessions and/or service referral plans. We have chosen purposely not to go into detail about these measures here because we did not want to become involved in arguments regarding the specific items, and because there are so many important procedural details regarding collection and reporting that we feel that topic merits a separate discussion. Our attempt here is to present the conceptual basis for CRM and we have therefore deferred discussion of these important issues in the service of this effort.

We do think it is important to re-emphasize that the measures suggested are derived from traditional outcome domains that have conceptual and practical importance

for patients, clinicians, policy makers and the public at large. They are 'true outcomes' and not process measures or 'interim outcomes'. In addition, most can be collected reliably and validly and there is a great wealth of data already collected on these domains providing substantial comparative information for evaluators and consumers.

Validating the integrity of concurrent recovery monitoring systems

There will be understandable concerns regarding the integrity of the CRM system, especially if those responsible for collecting the evaluation information (counselors, therapists, etc.) are also the subject of the evaluation. Validation efforts may be particularly important and complicated for those patients ordered into treatment and for those programs whose reimbursement is tied to the reported outcomes.

All evaluation and monitoring efforts are subject to circumvention efforts but there are also several auditing and validation options available to maintain credibility of these efforts. The evaluation data and methods proposed for use in the CRM approach could be subject to outside audits and validation, in much the way that contemporary health-care records are currently audited by payers, regulators and evaluators. For example, admission and attendance are matters of administrative record at all programs. Biological measures have been used widely to validate self-reports of alcohol and drug use (e.g. breathalyzer, urine screening, etc.). These measures would probably be available as part of routine program records.

Other measures could be requested of the patients to assist in the validation. For example, AA meetings provide chits (official records of the time and place of the attended meeting) initialed by the chairperson to validate self-help group attendance. Pay stubs can validate employment; receipts or vouchers may confirm use of welfare services and homeless shelters. Other indicators are more difficult to validate because they require examination of external records. For example, to validate report of arrests or incarcerations it is possible, but difficult, to examine local and state arrest and incarceration records. Use of expensive medical services such as emergency room and in-patient hospital stays (medical or psychiatric) can be validated through examination of local hospital records. Auditors could check public records regarding arrest, incarceration and welfare.

These efforts could validate patient self-reports. Under conditions where staff or program reports are tied to remuneration, it is possible to perform 'clinical audits' of staff or program reports through independent interviews of samples of patients to collect confidential reports of visits, drug use, employment and other relevant outcomes for comparison against the reports on the same patients, from the treatment programs. These procedures would be costly to sustain but not as costly as post-treatment follow-up procedures. Just as financial records are audited independently to maintain the credibility of book-keeping systems, these clinical audit procedures could help maintain the credibility of a CRM evaluation system.

Once again, we recognize that we have not specified the various validation and audit procedures in detail and again, these are not trivial considerations. Validation of any evaluation system will not be easy to develop, nor will it function perfectly once it is developed. We believe that the challenges (e.g. information systems compatibility, lag time in processing public records, HIPPA regulations, etc.) are possible to overcome. Indeed, without detracting from the importance of this argument, it must be remembered that all current evaluation efforts are far from perfect. Even under circumstances where evaluations are applied with great integrity, they have not provided the information that is possible from the proposed system. Thus, despite the problems inherent in moving toward a verifiable performance monitoring system, we believe that the potential value of that system would justify the effort.

Initiating a concurrent recovery monitoring system

We do not think it wise for a treatment system to initiate CRM with a full set of measures representing all four evaluation domains. For one thing, there are likely to be important management issues involved in the creation of a functioning management information system to collect and report the full set of recovery indicators (see McLellan *et al.* 2003). Moreover, it will be important to integrate these CRM procedures into clinical as well as evaluation procedures, and this will probably take some time and management. For these reasons it seems prudent to initiate concurrent recovery monitoring, with only a few indicators in order to build acceptance for the general evaluation approach, and then introduce the remaining indicators as the system accommodates.

The state of Delaware has initiated such a system and, with the above considerations in mind, began with a single criterion—active participation in treatment, measured through visit records. As reported by one author (J.K.), even this single criterion presented some administrative problems for timely collection and clinical administrative use by the program administration. None the less, this single criterion had wide appeal within the programs as being fair, easy to collect and, most of all, a clinically appropriate target for improvement. Also, and as expected, resulting reports showed some significant inter-program differences in retention rates, and a system-wide difficulty in retaining women clients. State-level management performed the required audits to assure the

integrity of the reporting (to dispel assertions that the differences were due to unequal reporting practices) and provided training in evidence-based practices to improve this measure (e.g. Motivational Enhancement Training). Concurrent with this, the state improved data collection and processing to make the information timely and useful to the programs. At the time of writing, they are now ready to introduce additional measures requested by their state legislature (new arrests, employment, use of emergency rooms, etc.) into the system.

DISCUSSION

To address the continuing need for more accountability in the substance abuse treatment field, this paper has suggested a blending of the clinically and socially relevant behavioral outcome measures used in traditional post-treatment evaluation—commonly called 'recovery'—with the efficient and repeated measurement procedures used in managing chronic medical conditions (see Wagner *et al.* 1996) and in office-based psychotherapy for mental illnesses (see Lambert *et al.* 2001). Instead of having independent evaluators perform one or two follow-up interviews with patients, 6–12 months following discharge from addiction treatment we have suggested that clinical personnel collect and utilize a subset of these same behavioral outcome measures regularly during the course of out-patient treatment. We have called this paradigm 'concurrent recovery monitoring' and have suggested that it be implemented and reimbursed as part of standard out-patient treatment of addiction.

Because we have recommended collecting these measures during the course of treatment, some will consider them 'process measures' or 'interim outcomes', as this is the traditional category for most performance measures collected during the treatment period. We do not see the suggested approach as process measurement. Indeed, to consider it in this way would be to ignore one of the most important implications from considering addiction as a chronic illness. Specifically, if a patient has achieved symptom reduction and status improvement adequate to enable him/her to function normally outside a controlled environment then this is a favorable outcome, regardless of whether it occurs during or following out-patient treatment. From this perspective, it follows that the traditional focus on post-treatment measurement may have inadvertently underestimated the true potential of addiction treatments to initiate and sustain positive outcomes.

Limitations

One of the important limitations of this paper is that it lacks (purposely) a discussion of the clinical management methods to be used in association with the suggested CRM approach. This is, of course, a critical topic, one that deserves significant empirical research. The inappropriate or punitive use of the suggested CRM system (or any other evaluation system) could be destructive to the already fragile addiction treatment system. We have seen the legitimate concepts of 'coordinated care management' and the prevention of 'medically unnecessary care', which spawned the managed care industry, become lost in an overriding effort to reduce costs (see Fox, Oss & Jardine 2000; MEDSTAT Group 2001).

Similarly, while we believe there is merit to our arguments and technical feasibility to the general concepts we have proposed, we have not discussed the specific measures that should represent each of the evaluation domains (substance use, personal and social function and public health and safety), nor have we discussed the specific procedures that would introduce, develop and sustain the proposed system. These purposeful omissions are due in part to our desire to focus on the conceptual basis for the system, but also because many of these important specific features are not known. Indeed, it will be essential to develop health services research efforts to determine the most viable of the concepts and the most practical of the procedures proposed here.

Evaluation implications of concurrent recovery monitoring

While the changes in evaluation methods suggested in our paradigm are certainly not novel, we believe there are significant positive implications for the addiction treatment system from adopting a version of CRM. On conceptual grounds, we take the position that that the achievement of abstinence, employment and crime free status (recovery) are legitimate, socially relevant, 'true outcomes' regardless of whether they are achieved only during out-patient treatment. Indeed, it is possible that, like those with other chronic illnesses, some chronically addicted patients may always be at risk of relapse if they are not monitored, supported and participating in some form of treatment (here we include AA, private therapy and perhaps phone monitoring) (see Finney *et al.* 1996; McKay *et al.* 1997, 1999, 2001; Ouimette *et al.* 1998; Humphreys & Tucker 2002).

From the perspective of the various health and social agencies that so regularly refer substance-abusing patients to treatment (see McLellan & Weisner 1996), the suggested CRM approach with its enhanced frequency of monitoring during out-patient treatment should be appealing and consonant with the demand for greater accountability. CRM also has obvious value for clinical management. In the absence of regular information about patient performance, it is not possible to provide

meaningful clinical supervision. The availability of regular, clinically relevant patient-level information, delivered in a timely and standardized manner through management information systems, may set the stage for the development of new, data-oriented, adaptive clinical practices (see Thall, Millikan & Sung 2000; Collins, Murphy & Bierman 2003; Murphy 2003) and ultimately for improved care. This will be an important area for future clinical and health services research.

A second important implication from the suggested CRM approach is that treatment programs should be willing and able to be accountable for the suggested patient goals during the course of treatment. Treatment programs have argued repeatedly—and we think validly—that it is not possible for them to be responsible for the behaviors of their patients 6–12 months beyond the discharge point. If clinically sensible and achievable behavioral targets can be negotiated and it is possible to measure patient performance rapidly and validly toward those targets, it is then reasonable to hold the treatment providers and the patients accountable for the expected changes, at least during the period of time in which the treatment is provided.

Clinical implications of concurrent recovery monitoring

An important and exciting implication of the shift in evaluation from post-treatment to during treatment is that it should focus clinical attention on the important aspects of care (medications, therapies, services) that are expected to help patients change their behaviors. Indeed, we believe there is need for substantial change in the way out-patient addiction treatment is delivered and reimbursed. There are many open questions regarding which of the new evidenced-based medications, therapies and services will work for an individual patient in a specific set of circumstances and at a particular point in the continuum of care. However, the contribution of regular, relevant reports on patient performance should enable clinicians to address these questions and to begin to systematize their clinical approach.

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