

Giving Clinical Meaning to Patient Assessment:
Technology Transfer to Improve Treatment Care Planning and Service Delivery

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Abstract

This NIDA-funded study evaluated the benefits of a brief training designed to give clinical meaning and value to a research-based assessment, thereby improving treatment care planning, service-needs matching, and patient satisfaction. The Addiction Severity Index (ASI) was used as the assessment. Data were analyzed from 33 counselors and 131 patients from 9 treatment programs, randomly assigned to one of two conditions. The Standard Assessment (SA) training condition included a two-day training course on the use of a computer-assisted ASI interview as a patient assessment tool. The Enhanced Assessment (EA) training additionally received an additional 2 hours of training on a computer Resource Guide (RG) to free or low-cost “wrap-around” (e.g. medical, employment, legal, housing, psychiatric) services. The goal of this training was to provide the counselors with a concrete method of linking the patient’s problems identified in the ASI to services in each of the problem areas and thereby, provide better treatment plans and better problem to services matching for patients in substance abuse treatment.

Results - Eighty-nine percent of counselors in the EA group used the Resource Guide to access services for their patients. Patients in the EA group had substantially better-matched treatment plans (matching patient problems to plans for treatment or services), and received significantly increased and better-matched services than patients in the SA group. These findings are discussed with regard to their implications for practical improvements in contemporary substance abuse treatment delivery.

Keywords: Technology transfer, assessment, training, matching, treatment

1. Introduction

The “gap” - There has been recognition of a gap between what is known to be effective clinical practice - as judged from the scientific literature, and what is common practice in "real world" conditions (Lamb et. al., 1998). For example, over the past ten years there have been significant advances in the development of effective medications (Buprenorphine, Bupropion, Naltrexone, LAAM), as well as effective behavioral interventions for the treatment of addictive disorders. Examples of these include intensive case management (McLellan et. al., 1999); Cognitive Behavioral Therapy (Carroll, 1998, Dexter & Goetzke, 1995); Motivational Interviewing (Miller & Rollnick, 1991, Martino et. al., 2000) and Behavioral Couples and Family Therapy (Fals-Stewart et. al., 1996) to name just a few. While these medications and behavioral approaches have established empirical support and acceptance within the scientific community; they have largely remained undelivered in community treatment programs. It is distressing for the research community and unfortunate for treatment providers and their patients that so few of these interventions have been put into general practice. New and effective treatments, in any form, cannot help patients if they are not practical, accessible and utilized.

How do we close the gap? Researchers cannot simply assume that a "scientifically" better intervention will be practical, desirable, or cost effective. To bring validated, effective interventions into community-based treatment programs, scientists must be aware of the significant economic, political, technological, and practical issues faced by the treatment community. There is a recognized need to expand the process of transferring what we have learned in clinical laboratory studies into widespread treatment practice (Backer and David, 1995;Lamb et. al., 1998).

Patient Assessment and Treatment Planning - Perhaps the best place to begin this technology transfer effort is with one of the most fundamental clinical processes in substance abuse treatment: the initial assessment and treatment care planning. There are many reasons to start here. From a clinical perspective, the initial assessment session is an opportunity, not just for relevant data collection, but also the development of a "helping alliance" between the counselor and the patient (See Luborsky et. al., 1996). From an administrative perspective comprehensive assessment is a significant part of regulatory agency requirements. However, current treatment assessment processes are widely thought to be time consuming and not clinically useful (See McLellan, Carise et al., 2003). Thus, if more clinically sensitive assessment methods were developed that also met regulatory requirements, there is reason to think that there would be broad willingness to put them into practice.

From a research perspective, improved assessment and treatment planning have been linked to better patient performance. For example, it is possible to consider the initial assessment and treatment-planning interview as a "brief intervention." In this regard, there has been a great deal of research showing lasting clinical benefits of brief interventions (Babor et al., 1987; Chick et al., 1985; Heather, 1989; Ritson, 1986; Sanchez-Craig & Wilkinson, 1989) and even single "Motivational Interviewing" sessions (Miller & Brown, 1991). Also, it has been shown that patients whose problems are identified at admission; and then receive services that are matched to those problems, stay in treatment longer (McLellan et. al., 1993; 1997; Hser et al., 1999).

The Addiction Severity Index (ASI) – The ASI is a patient assessment interview developed and used as part of treatment outcome research studies. As a research tool, it has established reliability and validity (McLellan, Kushner, Metzger et. al., 1992), but there has been

comparatively little effort to convert the “research data” collected in the ASI to “clinical information” for practical use by counselors in treatment planning. Consequently, there is reason to think that if this research-derived, clinical interview could be made more relevant to the clinical tasks of assessment and treatment planning, while at the same time more cost effective and easier to use by those charged with completing it, it would be better implemented, lead to increased patient engagement, and possibly even better treatment outcomes.

Recently our group has turned to computer science as a way of using technology to transfer research-derived procedures into clinical use. Specifically, we have developed computer software that appears to improve and simplify the ASI interview. With this software, counselors have been able to complete interviews directly on computers and immediately convert that information into relevant clinical reports (Carise et. al., 1999; Carise et al., 2000). Other researchers working in this area have also developed similarly effective procedures (See Budman, et. al., 2001).

The purpose of this study was to evaluate a counselor-administered, computerized assessment (ASI) and treatment planning procedure designed to link patient problems identified during the assessment with low or no-cost community services for those problems. We hoped this new procedure would improve the clinical value of the previously research-derived admission assessment, thereby leading to improved treatment care planning, provision of more and better matched services and greater patient satisfaction.

2. Methods

2.1. Participants

This study included both counselors and patients as subjects. Data are reported on 33 counselors and 131 patients from 9 community-based substance abuse treatment programs.

2.2. Instruments & Measures

Programs - We used the Addiction Treatment Inventory (ATI)(Carise et al., 2000), to measure program characteristics. The ATI is a semi-structured interview completed with treatment program directors, designed to provide standard information on the practices, personnel and treatment orientation of a substance abuse treatment program. Information is gathered in five general areas; organizational structure, patients accepted, services delivered, staffing profile, and financing.

Counselors – We used a 33-item questionnaire to describe counselor characteristics including demographic information (age, race, gender) as well as information about work history (types of positions held, date hired, previous training on the ASI or treatment care planning, years in the field, resources used for finding services), and personal history with addiction (recovery status, prior treatment experiences).

Treatment Care Plan (TCP) – All counselors develop a Treatment Care Plan (TCP) for each patient as a part of their standard clinical duties. TCP's are required on all patients at all licensed programs in the state. We collected the TCPs and evaluated the nature and amount of services counselors planned for their patients, and measured the degree to which the needs of patients measured by the counselors at intake assessment matched the services planned by their counselors in the TCPs.

Patients - We used the Addiction Severity Index (ASI) (McLellan et. al., 1985, 1992) to measure patient background and pre-treatment status. The ASI provides measures of the nature and severity of problems in medical, employment, alcohol/drug use, legal status, family relations and social support and psychiatric functioning. Specific information is collected about the 30 days prior to evaluation, and across a patient's lifetime in each of these areas. The reliability and

validity of the instrument has been found to be high across a wide range of substance abuse patients presenting for treatment (McLellan et. al., 1985; 1992).

Services Received – We used the Treatment Services Review (TSR) (McLellan, Alterman, Cacciola, et. al., 1992; McLellan, Alterman, Woody, et. al., 1992; McLellan, Grissom, et. al., 1993) to measure the nature and amount of services actually received by the patients. The TSR is a brief (10-15 minute), structured interview administered in person or over the phone to provide information on the types and, amount of services provided (directly or via referral) to a substance abuse patient while in treatment. The interview is designed for administration by a trained technician on a weekly or bi-weekly basis. The treatment services are divided into the same seven problem areas covered in the ASI. The TSR has been shown to provide a reliable and valid record of these services in several studies (McLellan et. al, 1992; 1993; 1999).

Within each of these problem areas information on the types of services received is categorized as general or specialized. “General Services” include staff guidance and peer counsel received during general group or individual counseling sessions. “Specialized Services” are those provided by a staff member with special training (e.g., vocational counselor, case manager, family therapist, etc), and the distinguishing feature is their focus upon a single topic or problem. For example, a group or individual counseling session where a patient discussed problems of depression would be counted as a general counseling session in the Psychiatric section of the TSR. “Specialized Services” in the psychiatric area would include evaluations or testing for psychological or emotional problems, biofeedback, or a session with a psychiatrist, psychologist or psychiatric social worker to discuss emotional problems.

Patient Satisfaction – We used the Client Satisfaction Questionnaire (CSQ) to measure patient’s acceptance and satisfaction with their experience during treatment. The CSQ consists

of 18, 4-point bi-polar items that relate to client satisfaction with services. This scale has been shown to have stable psychometric properties (Attkisson & Zwick, 1982). It was administered to all client/patients at the time of their second TSR interview.

Patient-Counselor Relationship - The Helping Alliance Questionnaire (HAQ) was used to measure features of the relationship between the client and the counselor. The HAQ is a 12-item, self-administered measure of the patient's feelings about the nature of his/her relationship with the counselor. This measure has been used regularly in therapy trials and has been a consistent predictor of favorable outcome (Luborsky et. al., 1996). It provides a sensitive indication of the early engagement of the patient, and has been used to predict retention.

2.3. Procedures

Site Recruitment and Assignment – Using a list provided by the Coordinating Office of Drug and Alcohol Programs (CODAAP) in Philadelphia, we approached 20 randomly selected outpatient treatment programs in Philadelphia. We tried to make the research project attractive to programs and their counselors. Each program was offered \$200 for each participating counselor (up to a maximum of \$1,000) to cover the costs of staff time while participating in research data collection. In addition, the ASI training that was offered by the project was accepted by CODAAP for continuing education credits needed by the programs and counselors as part of their annual certification by the city. The counselors within these programs received \$75 for their participation as well as the continuing education credits.

Despite these efforts, only ten programs (50%) agreed to participate. Among those programs refusing, seven felt the high level of staff turn-over would not permit participation, two more were not interested in participating in any type of research and one program wanted increased monetary compensation for their participation. Many of these sites reported their staff

was simply overwhelmed. Because of consent limitations, we were not able to collect information on programs that refused participation. We know of no obvious differences in size, organization, or operating characteristics between those programs that did not participate and those that did. However, we cannot rule out some subtle bias in our participating sample.

The ten treatment programs that agreed to participate were randomly assigned to one of the two training conditions and provided with training. After receiving the training, one site dropped out of the study due to administrative problems.

Counselor Recruitment - Both counselors and patients provided written informed consent. Procedures followed were in accord with the standards of the Committee on Human Experimentation and were conducted in accord with the Helsinki Declaration of 1975. Counselors at each site were free to decline participation and were assured that their employment would not be affected in any way by participation or non-participation.

Fifty-six counselors were initially trained, 3-10 counselors from each site. Importantly, no counselors refused the opportunity to participate in the research. However, of the 56 counselors initially trained, 23 (41%) dropped out of the study within the first six months, 36% of the EA group (10 of 28), and 46% of the SA group (10 of 28). Counselor resignation from the agencies was the primary reason for drop out and this is an important area of concern for treatment programs and their patients (See McLellan, Carise et al., 2003).

Patient Recruitment – Following ASI training, each counselor was asked to recruit his or her next five consecutive patients. Counselors approached these patients at the time of intake, using a standard script rehearsed during the ASI training. Patients were told that the research project would not interfere with their treatment and that all information would be kept confidential from all persons and agencies. Patients were told that if they consented to

participation, they would be contacted by researchers from the Treatment Research Institute for brief, confidential interviews at two and four weeks following their admission. Patients were offered \$10.00 for each of the two 15-minute telephone interviews. A total of 132 patients were approached for participation during the course of the study and all agreed. However, one patient subsequently did not participate due to a physical disability.

In summary, data reported here result from nine programs, 33 counselors and 131 patients who participated in the study. Four programs, 18 counselors and 75 patients were included in the Enhanced Assessment (EA) condition, while five programs, 15 counselors and 56 patients were included in the Standard Assessment (SA) condition.

Training - Counselors in both conditions (SA and EA) were provided with manuals, ongoing access to a toll-free help line, post training competency feedback, and a 12-hour training on administering the ASI using a software program originally developed for a national project - the Drug Evaluation Network System (DENS) (Carise, et al, 1999). The DENS ASI software was designed to make the collection of the ASI easier, more accurate and more valuable to clinicians. The software provides item-by-item instructions for the interviewer including suggestions for probes and follow-up questions. There are 150 consistency checks built into the program to assure internal consistency, and all items are range checked. To improve the clinical utility of the collected information, the program includes a feature that generates a “biopsychosocial narrative” required by most state and agency regulators.

The ASI training provided in this study (to all counselors in both conditions) also included training in use of the report generating functions, since it is now the standard method of ASI training (See Rawson & Stein, in press). This training method assists counselors in

recognizing relevant problems in their patients at the time of admission to treatment, and facilitates accurate data collection.

Development of a Resource Guide (RG) – The only difference between the training interventions in the two conditions was that counselors in the EA condition also received an additional 2-hours of hands-on training in using the Resource Guide software to find social and personal health services for their patients and to integrate this information in treatment planning. The Resource Guide was adapted from the 1998-1999 Electronic Edition of the First Call for Help directory developed by the United Way of Southeastern Pennsylvania in cooperation with Dorland's Directories (Mackie & Walton 1998). This is an electronic directory that is available to all social service agencies in greater Philadelphia. However, due to low availability of computers in most drug and alcohol treatment agencies and the lack of training in how to use the Guide, it has not been used in an optimal fashion.

The Guide included information on 1524 agencies, sorted by agency name, services provided, and 131 keywords. The Guide included substantial descriptive information about each agency (programs, special services available, fee structure, eligibility, etc.) and all necessary contact information to facilitate easy needs-services matching (See Gurel et al, 2003, in submission, for a complete description).

Competency Measures - Following the training, standard competency measures were collected from all counselors to test understanding of the ASI (Fureman, et al, 1994). There were no significant between-groups differences in competency. Counselors in the SA averaged 69% and counselors in the EA group averaged 77% ($F=2.139$, $df=(1,32)$, $p=.16$). Additionally, there were no significant between-groups differences among counselor competency as measured by a standardized video coding exercise (SA=82%, EA=87%, $F=2.181$, $df=(1,22)$, $p=.16$). These

scores are considered acceptable evidence of counselor competency in understanding and using the ASI (Fureman et al., 1994).

Post Admission Data Collection - Interviewers from the research staff contacted patients by phone, 2 and 4 weeks following the intake assessment to conduct TSR interviews. The HAQ and the CSQ were completed only at the 4-week follow-up. At week 2, we collected data on 126 of the 131 patients (96%), and at the 4-week follow-up point, we collected data on 115 patients (87%).

Procedures for Defining and Scoring “Problems”, “Services”, and “Matching” - The study analyses required 3 standardized operational definitions – the definition of (1) a “problem” at admission assessment, (2) a problem identified on the treatment plan; and (3) “adequate, appropriate services” for addressing the problems during the course of treatment. We felt these definitions required an uncomplicated format if they were to be applied in real world conditions, and an unambiguous interpretation by independent raters. Finally, we needed an apriori algorithm to indicate a “match” between the problems presented at assessment and the services provided during treatment. To these ends we based our definitions and matching algorithms on our prior, published work on matching services to problems (See McLellan et al., 1999) as described below.

A “Problem” Identified at the Assessment - Consistent with the format of the ASI, we defined “problem” status in each of the seven areas as “Need for Treatment” (See McLellan et al., 1992) and used algorithms of the most objective items in each of the problem areas to derive a simple, three-point scoring format (0-2 in each section), with a score of “0” indicating no problem, “1” indicating some problem, and “2” indicating a significant problem. For example, a score of 2 is indicated in the Psychiatric section of the ASI if: the patient reports significant, past

30 days experiences with hallucinations, having trouble controlling violent behavior, suicidal ideation, suicide attempts, or more than 6 days of psychiatric problems in the past 30 days, or if the patient reports being extremely troubled by psychiatric problems or rates the receipt of psychiatric help as extremely important. A full description of scoring procedures can be obtained from the authors.

A “Problem” Identified in the Treatment Plan – We again used a simple, 3 point (0–2) rating to determine whether the treatment care plan in each area addressed the problem. A score of “0” in the rating of the treatment care plan indicated that the problem was not mentioned in the plan; “1” indicated a mention of the problem but no clear time frame or service suggested; and “2” indicated the problem was mentioned with a clear indication of a service and/or a time frame for dealing with the problem. We also judged the degree of “match” between the problems identified in the ASI assessment and the Treatment Plan by comparing the two sets of 3-point scores.

An “Appropriate Service” Provided During Treatment – We summed the 2-week and 4-week TSR measures of the number and types of services received by each patient in each of the seven problem areas. Prior work (See McLellan et. al., 1998; 1999) had shown differential impact from “specialized” sessions, as compared with simply mentioning a problem in the context of a “general” counseling sessions. Therefore, after analyzing results for total services received, general counseling sessions and specialized services (e.g. seeing a social worker for an employment or family problem; physician or nurse for a medical problem; receiving medications), were analyzed separately. Drug and alcohol counseling sessions were considered “specialized” services in the drug and alcohol problem areas only. Services received either on-

site (at the treatment program) or off-site via referral from the treatment program were both counted.

We reduced these total scores to the same 3-point rating in a face valid manner: a problem received an “addressed score” of “2” if the TSR showed both a specialized service and at least 2 general counseling discussions received for that problem. A score of “1” if either one specialized service or two general counseling sessions were received. The problem was scored “0” if there were no services provided in the area or if the issue was discussed only once in the context of a general session.

Judging “Matches” Between Assessment and Treatment Plan; and Between Treatment Plan and Treatment Received – We compared the 3-point (0–2) ratings in the assessment (ASI), treatment care plan and treatment received (TSR) measures to determine the level of “matching.” In these calculations we examined each of the seven problem areas separately. In each of these areas we first eliminated problem scores of zero from the matching calculations. For non-zero problem scores, we considered as “matched” a Treatment Care Plan score that was the same number or higher as the corresponding ASI assessment score. That is, for a patient who received a “1” in the employment problem area, we scored as “matched,” Treatment Care Plan scores of “1” or “2”, however, for a patient who received a “2” in the employment problem area, we only scored Treatment Care Plan scores of “2” as a match. Similarly, we compared the scores in each problem area between the ASI assessment and the results of the TSR service report; and between the Treatment Care Plan score and the TSR service report – using the same formula. Chi-square tests were then used to compare the two groups on the proportion of matched scores in each area.

Three individuals, prior to any analyses, independently completed ratings of ASIs, TCPs and TSRs. There were minimal discrepancies among the ratings and these were resolved

through discussion. Thus, we found the 3-point scoring and matching algorithms easy and reliable to implement. In this regard, we recognize that this is an extremely simple (some would argue simplistic) method for defining problems, services and problem-service matching. We decided to use it for two reasons. First, this method had produced successful problem-service matching in our prior work (McLellan et al., 1997). Moreover, consistent with our goal of enabling direct translation of research to practice, the scoring system was simple enough to be used by clinical supervisors to monitor the quality of their day-to-day

Analyses – Chi-Square tests were performed for between condition (EA vs. SA) comparisons on descriptive, categorical variables such as treatment program characteristics, counselor race, gender, degrees held and recovery status, descriptive patient variables and all “matching” variables. ANOVA’s were performed comparing the groups on continuous variables such as numbers of services received, helping alliance and patient satisfaction scores. All analyses were performed using SPSS 10.0.

3. RESULTS

3.1 Descriptive Findings

Treatment Programs - All participating treatment programs were community-based agencies serving primarily impoverished areas within Philadelphia. The majority (7 of 9) were non-profit programs. None was part of the criminal justice system. Most (n=8) were affiliated with a larger, parent system. One was a recovery house, but all provided outpatient services. There were no significant differences ($p > .10$) between the programs assigned to the two intervention groups (SA and EA) on 11 general measures of program characteristics (such as IRS status, affiliation, length of stay, treatment hours per week, average waiting list, etc.).

In general, there were very few individual treatment services offered at any of these programs and there were no significant differences between the services offered in the SA and EA groups ($p>.10$). At all programs, the majority of staff were counselors. There were very few Psychiatrists, Psychologists, Social Workers, Case Managers, or Family Therapists. One treatment program offered weekly group sessions with a Psychiatric resident as part of an on-site training project with a local medical school. Four other programs offered weekly sessions with either Case Managers or Family Therapists – again, typically provided through training projects or research projects in association with local universities. All 9 programs reported offering group counseling sessions as well as monthly urine drug testing. Only about half of the programs from each group reported providing any type of on-site medical evaluations, or HIV testing. There were no between-groups differences on the types or frequency of services offered ($p>.10$).

We also evaluated whether there had been different levels of use of various service resource guides by the two groups prior to the start of the intervention. There were no significant differences between groups on the use of referral sources such as yellow, white, or ‘blue’ pages or previous use of the United Way First Call for Help guide ($p>.10$).

Counselors – Approximately half the counselors were male, 45% (15) were European American, 42% (14) were African American and 12% (4) were Hispanic American.

There were no significant between-groups differences ($p>.10$) on number of years working in the substance abuse field ($X=6.9$ years), previous training on the ASI (50% in SA group vs. 60% in EA group), or number of ASI’s or treatment plans previously conducted ($X=52$ in SA group and 41 in EA group). Sixty-seven percent of counselors in the EA group reported being in recovery from prior drug or alcohol abuse whereas 46% of the SA counselors reported

being in recovery (NS, $p > .10$). There were significant differences in educational degree's received between the two groups. Counselors from the SA group were more evenly divided between those with high school degrees (21%), bachelor degrees (43%), and master degrees (36%), whereas counselors from the EA group were more likely to have either high school degrees (44%), or masters degrees (56%, $p < .01$). The SA group did have more African-American counselors (78 %vs. 16%, $p < .000$).

Patients – As described above, the 15 counselors in the SA group recruited 56 patients and the 18 counselors in the EA group recruited 75 patients for a total of 131 patients. The majority (70%) of those patients were African American, 18% were European American and 13% were Hispanic American; 65% of patients were male.

There were few significant between-groups differences at baseline on all demographic, patient history or problem severity measures from the ASI. Patients in the EA group reported having completed more years of education than those in the SA group (11.7 years vs. 10.6 years, $p < .05$). The SA group reported receiving more money from welfare in the past month (\$229 vs. \$81, $p < .01$), and reported having more dependents (1.1 vs. 0.5, $p < .05$). The EA group however, reported more poly-substance use (3.6 days vs. 1 day, $p < .01$), spending more money on drugs (\$263 vs. \$26, $p < .01$), and having more days of illegal activities (1.6 days vs. 0 days, $p < .05$) in the past month. Additionally, patients from the EA group were more likely to be on probation or parole (42% vs. 15%, $p < .01$), and to have had someone from the criminal justice system suggest they enter substance abused treatment (38% vs. 9%, $p < .01$). Finally, there were more males in the EA group (73% vs. 48%, $p < .01$), and more African American patients in the SA group (83% vs. 61%, $p > .01$). There were no significant between-groups differences on patient ratings (how

troubled or bothered by problems, and how important is treatment), or on interviewer severity ratings, in any of the 7 ASI problem areas.

3.2 Findings Related to Hypotheses

H₁: Counselors who received the EA would develop Treatment Care Plans that better matched patients' needs – As discussed previously, independent raters scored both the Assessments and the Treatment Plans. Chi-square tests were then used to compare the two groups on the proportion of matched scores in each area. As shown in Figure 1, the TCP-to-ASI matching scores for patients in the EA group were significantly higher than those in the SA group in every one of the seven problem areas (all $p < .05$ or less).

H₂: Patients whose counselors received the EA would receive more total services - We compared the total number of general and specialized services received in the first four weeks of treatment, in each of the seven problem areas measured (medical, employment, drug, alcohol, legal, family, psychiatric) using between-groups ANOVA. As shown in Table 1, patients whose counselors were in the EA group received more than 3 times as many total services than those patients whose counselors were in the SA group ($X=107$ and 34 respectively, $F=37.9$, $df=102$, $p < .001$).

In subsequent analyses of these service data we compared the total number of general and specific services received by each group. Again, as seen in Table 1 patients from the EA group received significantly more general services ($X=71$, $SD=53$) over the first 4 weeks of treatment than patients from the SA group ($X=15$, $SD=26$) ($F=42$, $df=102$, $p < .001$); and this was true for each of the seven areas measured (medical, employment, drug, alcohol, family, legal, psychiatric). Specifically, patients in the EA group received an average of $20(SD=16)$ drug/alcohol services, as compared with $5(SD=8)$ such services received by patients in the SA

group ($F=33.4$, $df=104$, $p<.000$). Similar differences were also found between the EA and SA groups in the number of general medical (15 vs. 3, $F=10.6$, $df=105$, $p<.000$), employment (5 vs. 1, $F=16.4$, $df=103$, $p<.000$), and psychiatric services (26 vs. 4, $F=28.6$, $df=105$, $p<.000$) received. Other differences in the number of general counseling sessions were found in the family/social area (3 vs. 1, $F=6.3$, $df=105$, $p<.05$) and legal services area (.8 vs. .02, $F=6.3$, $df=105$, $p<.05$).

Using the same analyses, we also compared the total number of specialized services received by each group during the first 4 weeks of treatment. Patients from the EA group received an average of 35 ($SD=26$) specialized services over the first 4 weeks of treatment whereas patients from the SA group received an average of 20 ($SD=12$) specialized services in the first 4 weeks ($F=12.2$, $df=104$, $p<.001$). Analyses by content area showed that there were significantly more specialized services received by the EA group in the areas of drug/alcohol treatment (17 vs. 6, $F=19.5$, $df=105$, $p<.001$) and family services (6 vs. 3, $F=4.2$, $df=105$, $p<.05$). Specifically, we found that patients from the EA group attended significantly more 12-step meetings (4.6 vs. <1, $F=17.7$, $df=105$, $p<.000$), and more sessions dedicated to coping with family or social conflicts (.99 vs. .26, $F=8.89$, $df=105$, $p<.01$), although the frequency of this type of service was quite low in both groups.

There were generally few specialized services provided to patients in either group in the medical, employment, legal, and psychiatric areas (Table 1). There was no problem area where SA patients received more specified services than patients in the EA group. Although the two groups differed in the expected direction in virtually all of these problem areas, none was significant between the EA and SA groups ($p>.08$ See Table 1).

H₃: Patients whose counselors received the EA would receive services that were better matched to their problems - At the 2 week point in treatment, the services received by patients

in the EA group were significantly ($p < .05$ or less) more likely to be “matched” in 5 of the 7 problem areas (medical, employment, drug, alcohol, and psychiatric). In the other two areas (family and legal problems), there were no significant between-groups differences. See Figure 2.

Services reported on the TSR in the second two weeks of treatment (week 4 TSR) continued to remain better matched ($p < .05$ or less) to the patient’s needs in 4 of the 7 problem areas (employment, drug, alcohol, and psychiatric), but not in the other three areas (medical, family and legal problems). See Figure 3.

H₄: Counselors who received the Enhanced Training would show higher "helping alliance" ratings and greater patient satisfaction, than counselors who received the Standard Training – We performed ANOVAs on scores from the Helping Alliance and Client Satisfaction Questionnaires. We were surprised to find no significant group differences on the Helping Alliance Questionnaires (EA $X=28$, $SD=5$, SA $X=29$, $SD=4$, $p=.38$). In general the scores were quite high in both groups indicating that patients generally felt they formed a good relationship with their counselor, that their counselor appeared interested in them, and able to help them, regardless of group (ET vs. ST).

Additionally, we found no significant group differences on the Client Satisfaction Questionnaire (EA $X=84$, $SD=9$, SA $X=86$, $SD=7$, $p=.16$). Again, patients reported very high ratings for the overall quality of services received, types of services received, satisfaction with the amount of services, and willingness to return to the treatment program or to refer others to that program.

4. Discussion and Limitations

We felt that making an easy to use, computerized directory of available resources, and providing a brief training (2 hours) on its use would improve the quality of patient treatment care

planning, the number and appropriateness of services delivered, patient-counselor alliance and patient satisfaction levels. We found that we were indeed able to improve the “match” between information provided at intake and the issues targeted in the treatment care plan, as well as the number and appropriateness of services received by the patient. However, we did not see evidence that the enhanced training improved either patient satisfaction or helping alliance.

Limitations - Before we discuss the implications of these findings it is important to note some limitations. Primary limitations in this study include its implementation in just one city, the number of treatment programs that would not participate in a research study (10 of 20 randomly selected programs declined participation), staff turnover, and the lack of post-treatment outcome data. This study was restricted to treatment programs in Philadelphia because the initial resource guide work was confined to the Philadelphia area. It was thought that we should try this “technology transfer” method locally prior to incurring the expense of developing a broader application.

We were only able to recruit 10 of 20 outpatient substance abuse treatment programs approached to participate in this study. Although these programs were randomly assigned, a larger number of participating programs would have allowed for more confidence in the results. More importantly, half of the programs declined to participate even though the study had numerous incentives for treatment program directors, counselors, and patients. This is important both for generality of the findings, and for the larger goal of improving technology transfer. Seven of the 10 treatment programs that declined participation reported that their staff turnover rates would not permit implementation of any type of study. We have seen this same type of employee instability in a national study (See McLellan, Carise et al., 2003) and have noted the implications of this instability for technology transfer efforts of any kind. There is little doubt

that many of these outpatient programs are overwhelmed by the severity of patient problems, the counselor turnover, and the increasing demands of managed care procedures. We continue to feel that those programs that did not participate would also have benefited, but it remains a challenge to increase technology transfer efforts to convince overwhelmed, skeptical programs of “added value” in adopting new research-based technology.

As indicated, counselor turnover was particularly disconcerting from a clinical standpoint. As discussed above, we originally trained 56 counselors. A total of 23 (41%) counselors dropped out of study participation within 6-8 months, 15 of the counselors (28% of the total sample) had resigned from their agencies. Eight counselors continued working at their agencies, but dropped out of the study citing heavy case loads, a change of position at their program, and other reasons. This level of staff change is disruptive to clinical and management efforts and underscores the need for efforts to improve working conditions (salaries, training, advancement, etc.) for the primary care givers in substance abuse treatment programs. In this regard, it is interesting that 36% of the counselors in the SA group (10 of 28) resigned, but only 18% (5 of 28) of the counselors in the EA group resigned. It is possible, but admittedly speculative that the EA led to more mastery and job satisfaction for counselors in that group.

Another limitation imposed by the study design is the absence of pre-intervention information on the nature and completeness of the treatment plans and the level of problem-service matching. We plan to address this limitation in a follow-up study. We do not know whether or to what extent counselors were recognizing reported problems at assessment in their treatment care plans, or whether they were already implementing problem-service matching in their daily practices prior to the ASI training. While we cannot know this, we suspect that even the standard ASI training and the provision of the computer software may have increased the

overall level of problem recognition and possibly service provision for all counselors who participated. If this hypothesized general effect of improving problem recognition is true, it makes the observed differences between the EA and SA conditions more remarkable (See below).

Finally, the addition of patient follow-up measures would have provided valuable information for the study. Follow-up measures were not planned for this study since we felt it was important to first explore whether the training and resource guide would affect counselors treatment care planning, services received, and patient engagement and participation. Since these during-treatment results were in the expected direction, we now believe there is justification for additional exploration on the longer-term effects of the enhanced admission assessment procedure and we hope to address this in a follow-up study.

Implications - Although there are several limitations, the results of this study are nonetheless quite interesting and promising. In fact, we were surprised at the extent to which performance was so significantly and consistently better in the EA group, especially given the modest level of additional training and the fact that the software-based resource guide only included items that had always been available from traditional resources. This is important since it indicates that the improved counselor performance was not because this was the first time the additional services were available or locatable in Philadelphia. The computerized resource guide developed for this study was a modification of a resource guide available in print form in most treatment programs and social service agencies throughout Philadelphia – the United Way’s First Call for Help (Mackie & Walton 1998). Though we did make minor improvements in content and format; and provided a 2-hour training on its use, we are quite sure that the effort put toward

developing an easy-to-use, computerized linkage between the assessment (ASI) and the guide was largely responsible for the observed increase in utilization of the guide.

It should be noted that the pre-treatment measures of client characteristics and backgrounds makes it clear that, the improved performance was not because counselors in the EA group had more prior experience or had better understanding of the assessment used. Post training testing of all counselors showed approximately equal understanding of the ASI assessment procedures across groups. Finally, and most surprisingly, the better performance was not because the EA group formed better helping alliances or had greater levels of patient satisfaction, although this was a specific hypothesis of the study.

We think our findings are due to two factors. First, we provided clear, concrete instruction to counselors regarding clinical use of the assessment information. We believe this gave new meaning to the admission assessment, which had previously been thought by many to be just another mandatory piece of paperwork with little clinical use. It also gave a clear rationale for the development and use of a treatment care plan. Along with concrete instruction on what to do, the EA provided a tool that made treatment planning and service matching easy to do. We were happy to see that almost all (89%) counselors in the EA group reported using the Resource Guide; and that all categories of the resource guide were used at least once (the most frequently used services were in the educational, medical and psychological categories). Three of the counselors had used it with every patient; the remaining reported using with at least half of their patients. Interestingly, counselors at one site reported using the resource guide not only for their patients in treatment, but also for their own needs.

In summary, we are encouraged by our first effort at this technology transfer protocol and plan further studies that will address the limitations in this study, including the lack of follow-up

data, lack of pre-post data within treatment programs, and implementing the study in just one city. However, we think these findings, while encouraging, are only a modest effort in the important larger goal of improving the accessibility and quality of patient care in substance abuse treatment programs.

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Table 1**ANOVA – Between Groups Differences: Services Received**

Services Received	ST Group	ET Group	F	Sig.
	Mean (sd)	Mean (sd)		p<
Total Specialized and General Services	34 (32)	107 (71)	37.90	0.00
Specialized Services Total	20 (12)	35 (26)	12.23	0.00
General Services Total	15 (26)	71 (53)	42.05	0.00
General Services by Area				
Drug and Alcohol Services	5 (8)	20 (16)	33.38	0.00
Medical Services	3 (12)	15 (22)	10.61	0.00
Psychological Services	4 (8)	26 (27)	28.64	0.00
Employment Services	1 (2)	5 (5)	16.36	0.00
Legal Services	0 (.2)	1 (2)	6.28	0.01
Family Services	1 (3)	3 (4)	6.33	0.01
Specialized/Specialized by Area				
Drug and Alcohol Services	6 (5)	17 (15)	19.48	0.00
Medical Services	2 (4)	2 (4)	0.09	ns
Psychological Services	4 (3)	6 (8)	3.09	ns
Employment Services	3 (4)	3 (3)	0.49	ns
Legal Services	1 (1)	1 (2)	1.51	ns
Family Services	3 (4)	6 (7)	4.23	0.05

Figure 1

**Percent of Patient Problems at Admission Addressed by the Treatment Care Plan,
by Problem Area and Group.**

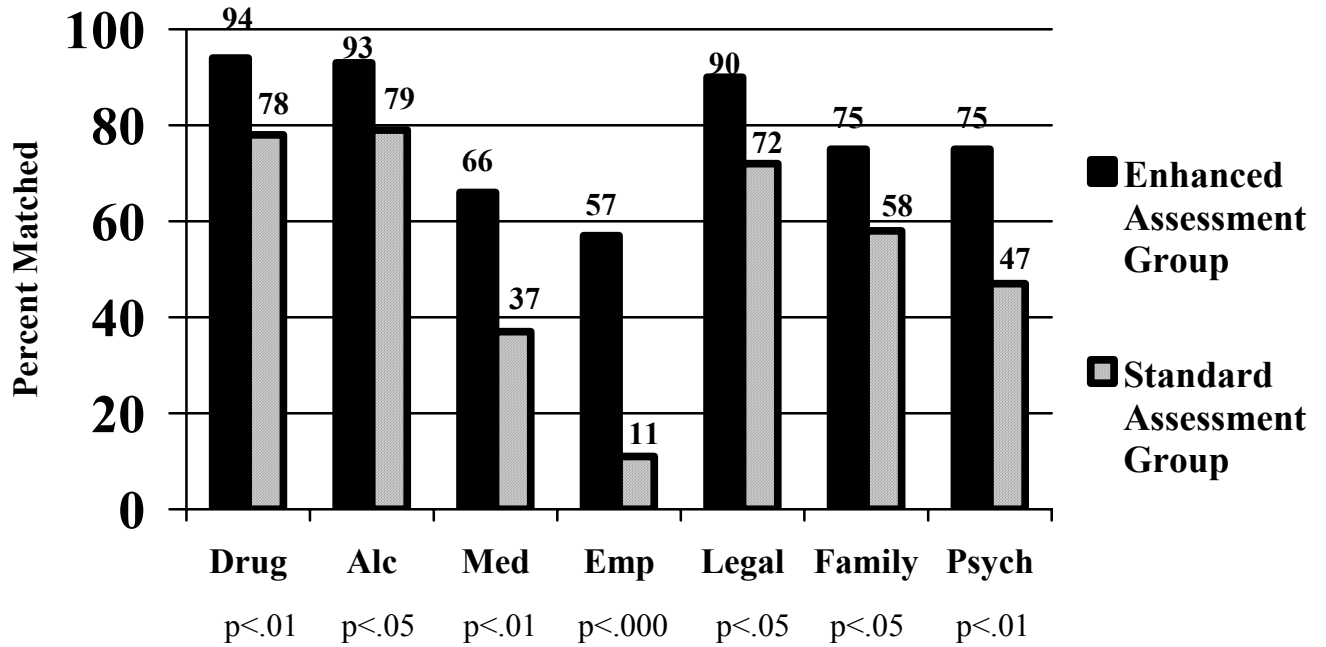


Figure 2

% Matched – Patient Problems at Admission (ASI) to Services Received (TSR) at 2 Weeks

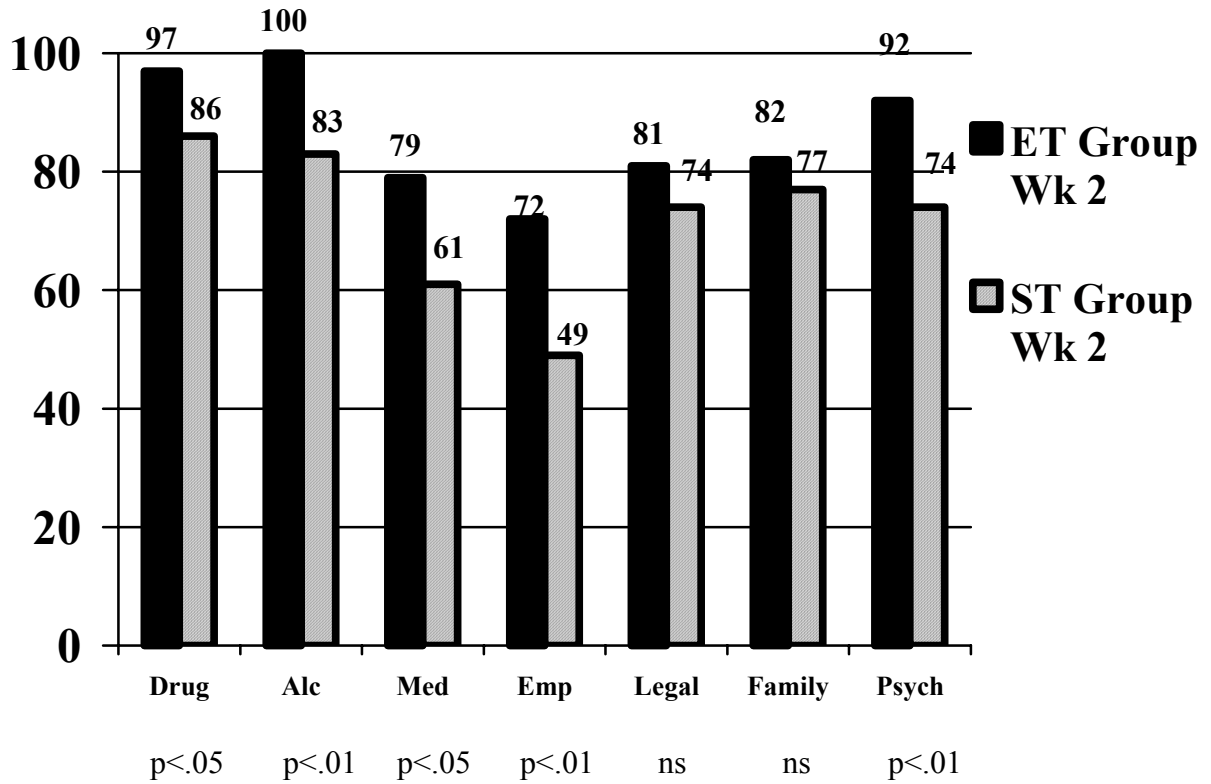


Figure 3

% Matched – Patient Problems at Admission (ASI) to Services Received (TSR) at 4 Weeks

