The American Journal on Addictions, 16:495–502, 2007

ISSN: 1055-0496 print / 1521-0391 online
DOI: 10.1080/10550490701641678

Telephone Enhancement of Long-term Engagement (TELE) in Continuing Care for Substance Abuse Treatment: A NIDA Clinical Trials Network (CTN) Study

Robert L. Hubbard, PhD,[1,2] Jeffrey D. Leimberger, PhD,[1] Louise Haynes, MSW,[3] Ashwin A. Patkar, MD,[1] John Holter, MD,[4] Michael R. Liepman, MD,[5,9] Kathi Lucas, RN,[1] Breque Tyson, PhD,[6] Tammy Day, RN,[1] Elizabeth A. Thorpe, MS,[9] Briar Faulkner, MSW,[7] Albert Hasson, MSW[8]

[1]Duke University Medical Center, Durham, North Carolina
[2]National Development and Research Institutes, Inc., Raleigh, North Carolina
[3]Lexington/Richland Alcohol and Drug Abuse Council, Columbia, South Carolina
[4]Walter B. Jones Alcohol and Drug Abuse Treatment Center, Greenville, North Carolina
[5]Michigan State University/Kalamazoo Center for Medical Studies, Kalamazoo, Michigan
[6]R.J. Blackley Alcohol and Drug Abuse Treatment Center, Butner, North Carolina
[7]Betty Ford Center, Rancho Mirage, California
[8]Integrated Substance Abuse Programs, University of California, Los Angeles, California
[9]Jim Gilmore Jr. Community Healing Center, Kalamazoo, Michigan

The TELE study examined the feasibility and potential efficacy of phone calls to patients after discharge from short-term inpatient and residential substance abuse treatment programs to encourage compliance with continuing care plans. After review of their continuing care plans, 339 patients from four programs were randomized either to receive calls or to have no planned contact. Ninety-two percent of patients randomized to receive calls received at least one call. No difference was found between groups in self-reported attendance at one or more outpatient counseling sessions after discharge ($p = .89$). When program records of all participants were examined, those receiving calls had a greater likelihood of documented attendance (48%) than those not called (37%). Results were not statistically significant ($p < .003$) because of the Hochberg correction for multiple tests. While the phone calls were feasible, the lack of clear evidence of efficacy of the calls suggests the need for further investigation of the role of telephone intervention to encourage compliance and improve outcomes. (Am J Addict 2007;16:495–502)

Received November 20, 2006; revised December 27, 2006; accepted March 7, 2007.

Presented in part at the Annual Meeting of the American Psychiatric Association, San Diego, California, USA, May 19–24, 2007.

Address correspondence to Dr. Hubbard, National Development and Research Institutes, 940 Main Campus Drive, Suite 140, Raleigh, NC 27606. E-mail: Hubbard@ndri-nc.org.

INTRODUCTION

Short-term (i.e., less than 31 days) residential (STR) and inpatient (STI) programs are widely used in the United States to stabilize persons with more severe addiction and related problems and then prepare them to return to community-based outpatient treatment. In 2004, the National Survey of Substance Abuse Treatment and Services (N-SSATS) reported that 1524 STR and 724 STI programs provided more than 30,000 beds.[1] The 2004 Treatment Episode Data System (TEDS) recorded approximately 175,000 admissions to STI/STR programs: 46,975 with a cocaine problem, 40,097 with a primary alcohol and a secondary drug problem, 31,238 with a primary problem of alcohol alone, 21,171 with a primary heroin problem, 15,641 with methamphetamine problems, and 7,589 with a primary problem with other opiates.[2] Relapse to any of these drugs during the first three months after discharge is not uncommon and may erode the positive changes initiated during treatment.[3] Attendance at a community-based outpatient program combined with participation in self-help groups such as Alcoholic Anonymous (AA) is typically a part of patients' continuing care plans. Patients complying with plans report lower relapse and re-addiction rates than those who do not comply with plans.[4] However, in a national epidemiological study of 802 discharges from 14 STI/STR

programs, only 14% of patients reported attending outpatient programs in the community in the first year after leaving, and less than half reported participation in self-help groups.[5]

A series of experimental comparison group studies with a variety of alcohol abuse patients has examined the hypothesis that post-discharge contact can improve compliance and outcomes. In chronic alcoholics, a single telephone call or letter expressing interest in the welfare of the participant had a significant positive effect on participation in aftercare activities.[6,7] Moreover, multiple calls to recovering alcohol-dependent men over 10 weeks were positively correlated with greater utilization of outpatient services and abstinence.[8] An automated phone messaging program and appointment cards over eight weeks significantly increased and prolonged attendance in aftercare group sessions.[9] Even a structured telephone follow-up research interview was correlated with improved abstinence.[10] On the other hand, no difference in recovery rates one year after discharge from two hospital-based treatment centers was observed for participants called by a center counselor every two weeks versus a control group with no formal contact.[11] These inconsistent findings have raised concerns about the efficacy of telephone interventions. A particular concern is how variations in content and process within and across calls might affect fidelity and effectiveness.[12]

In view of the numerous studies reporting positive outcomes and the potential effectiveness in improving long term outcomes, in 2003 the Steering Committee of the National Institute on Drug Abuse (NIDA) Clinical Trials Network[13] (CTN) recommended a pilot test of the feasibility and effectiveness of a telephone-based intervention. The Telephone Enhancement of Long-term Engagement (TELE) intervention adapted an approach developed and currently used by the Betty Ford Center. A series of calls is made to patients after discharge to encourage attendance at community-based outpatient treatment, to support AA participation, and to motivate compliance with continuing care plans.

METHODS

Design

A randomized parallel-group trial design called for the assignment at discharge of half of the patients to the Telephone Call Group (TCG) and the other half to the Standard Care Group (SCG). The protocol was approved in 2003 by the Duke University Institutional Review Board (IRB) and the site-affiliated IRBs.

Sites

Four STI/STR programs from three states were purposely selected to reflect different patient populations and lengths of stay. One program served patients from an entire state, and the others served patients in multiple counties within a state. The programs were all based near smaller urban areas surrounded by rural counties. Three of the programs were state-funded, and the fourth was a private non-profit organization. Two were situated on campuses adjacent to larger hospital facilities, and two were on campus settings specifically designed for substance abuse treatment. The programs' sizes ranged from 30 beds with 500 annual admissions to 150 beds with 2000 annual admissions. The planned duration of residence ranged from 10–14 days at one program to 21–28 days at the others. The common therapeutic approach across programs was similar to the traditional twelve-step model pioneered by Minnesota programs.[14]

Recruitment

Because assessment of feasibility and estimation of effect sizes were the primary objectives of the study, the sample size was based on the expected enrollment over a 12-month period rather than a statistical power calculation performed for efficacy trials. The two larger sites were expected to randomize 120 participants across the 12-month recruitment period, and the two smaller sites were expected to randomize 60 participants. However, due to problems in documenting the delivery of interventions, only 99 participants were randomized at one site, yielding a total of 339 enrolled participants. At admission, all patients were informed of an opportunity to participate in the study. Those expressing interest were screened for eligibility (at least 18 years of age, capable of understanding and providing written informed consent, not civilly committed, in the rehabilitation phase of treatment, diagnosed with substance abuse or dependence as determined by program admission information, not reporting suicidal intention in the past 30 days, and available to be contacted by phone after discharge). In order to facilitate the verification of attendance at community-based outpatient programs in two areas, eligibility was limited to patients from counties with larger numbers of referrals. A log was used to track the gender and age and reasons for refusal of individuals invited to participate. Participants were given a copy of the IRB-approved consent form to review, and questions were answered by a research assistant prior to signing the consent. Then within a week after admission, baseline measures were collected, including a Locator Form, used to facilitate contact for follow-up; the Risk Behavior Survey (RBS) to measure risk behaviors related to the human immunodeficiency virus (HIV) and hepatitis C virus (HCV); and the Addiction Severity Index (ASI-Lite). After collection of baseline data, all participants took part in usual activities of care at the programs until their discharge and therefore had a similar assessment experience.

Intervention

The TCG intervention manual was adapted from the manuals, materials, and training developed by the Betty

Ford Center with input from the sites to maximize compatibility with the operations and procedures of participating programs. A preliminary review of the discharge process at each site showed a range of approaches. To minimize variations in approaches to discharge, all sites agreed to the following:

- to prepare a continuing care plan for all consented participants and discuss that plan with each participant prior to discharge,
- that the TELE counselors (either selected from current qualified staff or hired specifically for the study) would attempt to telephone the TCG participants at weeks 1, 2, 4, 6, 8, 10, and 12 following discharge; and
- that when the participant was contacted, the TELE counselor would provide positive feedback to encourage compliance with the continuing care plan, including attendance at outpatient counseling, participation in AA, and medical, psychological, family or other services dictated by the needs of the participants.

The Betty Ford Center staff reviewed the TELE manual and protocol and hosted an orientation session for the TELE research staff.

The TELE counselors were all female and had very diverse backgrounds and varying levels of academic and clinical experience (one was a paraprofessional recovering person; two were Ph.D. candidate clinical psychologists). After training in the CTN Good Research Practices and Ethics was completed, the TELE counselors and their direct clinical supervisors participated in a four-hour training session comprised of a two-hour didactic session followed by two guided role plays. Prior to implementing the calls with participants, each TELE counselor conducted four practice calls with other program staff. The clinical supervisor reviewed and scored the practice calls for the presence of 12 positive substance and style elements (e.g., reviewed elements of care plan, set up next call, listened actively, used positive suggestions) and the absence of 12 negative elements (e.g., failure to discuss participants' functioning in areas of concern, took sides on issues, cut off discussion inappropriately). Before being certified to begin the calling, the TELE counselor had to have at least 9 of 12 positive elements in the calls and no more than 3 negative elements in the practice calls.

After program staff had prepared the continuing care plan, the participant met with the TELE research assistant not more than two business days prior to the scheduled discharge. At this meeting, the participant confirmed their understanding of the study and willingness to continue participation. The Locator Form was updated if necessary, and the 13-week follow-up interview was scheduled. Signed release forms were obtained to verify attendance at the community-based outpatient treatment after discharge. All consented participants then met individually with the TELE counselor to review their continuing care plans. The TELE counselor then randomized the participant to either the TCG or the SCG by opening the next sealed, sequentially numbered envelope from the set generated by the statistician. A stratified randomization with permuted blocks was used to maintain an approximate balance between groups at each site. Participants in both groups were reminded to follow their discharge plan by contacting and enrolling in an outpatient program and by participating in planned continuing care activities. Those in the TCG were reminded of the calls, and a time for the first call was scheduled. The goal of this pre-discharge meeting with all participants was to minimize differences in attention to the two groups prior to discharge to enable an uncontaminated comparison of the effect of the post-discharge phone calls.

Up to three attempts were permitted to contact the participant for each of the seven scheduled calls. The next scheduled call was attempted regardless of the outcome of the previously scheduled call, unless consent to participate was expressly revoked. An attempt was made to record all calls, which were encrypted and electronically sent to the statistician for scoring of fidelity by independent reviewers, with 25 percent of the calls to be scored by a second reviewer to calculate inter-rater reliability. The clinical supervisor at each site provided supervision to the TELE counselor at that site, using standard practices for the particular program (without input from the research fidelity reviewers).

Follow-Up

Participants in each group were scheduled for a follow-up visit at 13 weeks after discharge from the programs. If the first visit was missed, the TELE research assistants were directed to continue follow-up attempts for up to four additional weeks. The TELE research assistants conducting interviews were blinded to the condition to which the participant had been assigned. Follow-up interviews were conducted at the STI/STR if the participant was able to obtain transportation. If transportation could not be arranged, the researchers scheduled visits in the community. The follow-up interview included the CTN ASI-Lite and the Continuing Care Compliance Form, which documented participants' involvement with, knowledge of, and satisfaction with their prescribed continuing care plan. Questions about the primary outcome measures were asked prior to the questions about contact after discharge, which may have enabled the research assistants to identify the condition to which the participant was randomized. Two biological assays were administered to complement the self-report measures: a urine drug screen with temperature-controlled monitoring strips, which provided a rapid measure of opioids, methadone, benzoylegonin, amphetamines, cannabinoids, and benzodiazepines; and a breath alcohol test.

Data Analyses

The assessment of the feasibility of the TELE intervention is augmented by an effectiveness analysis.

Descriptive statistics were used to address the feasibility issues, while a combination of descriptive statistics and hypothesis-testing methods were used to explore the potential effectiveness of the intervention. For outcomes, data are presented and analyzed based on the principle of intention-to-treat all randomly assigned participants according to treatment assigned at randomization, regardless of treatment and protocol adherence. Summary data were analyzed across all sites, as well as by site. Endpoint variables are presented with the 95% confidence interval of the proportion. Inclusion of the confidence intervals allowed investigators to ascertain the values of the point estimates likely to be found in a full-scale efficacy trial. Pearson chi-square statistics were used to test for differences between the TCG and SCG for the primary and secondary endpoints. Because separate tests were planned for the self-report and the documentation endpoints, the significance level for tests involving the main effect of the intervention on attendance was adjusted for multiple comparisons according to the method of Hochberg.[15] Because the primary analysis of self-reported attendance was not significant at 0.05, the Hochberg procedure requires the test of the documented attendance outcome at a significance level of 0.025.

RESULTS

Subject Participation

Full enrollment in the trial was achieved in 9 rather than the planned 12 months. During that time, 897 individuals were admitted to the four participating STI/STR programs. Of those, 674 were eligible to participate, and 424 signed a consent form to take part in the study. Of those 424 who consented, 348 became eligible for randomization, and 339 were randomized into either the standard care group (SCG) or the telephone call group (TCG). As shown in Table 1, the proportions consenting ranged from 55% to 82% across the four sites, and the proportions randomized ranged from 74% to 88%.

Baseline data collected with ASI-Lite for the period prior to admission were reviewed for three purposes: to determine if the SCG and the TCG participants differed in ways that needed to be considered in post hoc analyses; to identify the need to consider site-specific differences in the analysis; and to suggest the applicability of the data to STI/STR patients across the country.

Demographic and descriptive characteristics of the participants are provided in Table 2. Approximately one-third of the participants were female. The median age was 37, with about one-third of the participants under age 30 and about one-third over 40 years of age. Participants of Hispanic origin comprised only 2.5% of the participants. The demographic characteristics were similar across the randomized groups, with slightly more females in the SCG (38%) compared to the TCG (33%).

Table 2 shows that more than half of the participants reported having used cocaine and/or alcohol to intoxication in the previous 30 days, and that 42.5 percent had used marijuana. Drug use patterns and previous alcohol and drug admissions were similar between groups, with the exception of marijuana use, which was more prevalent among the SCG (51%) compared to the TCG (34%).

Reports of medical problems, poor employment history, and legal problems were equally divided between randomized groups. More than half of the participants had been incarcerated, with approximately one-third currently on probation/parole. A history of physical (54%) or sexual abuse (34%) was common. More than half had been prescribed medication for mental health diagnoses, three-quarters reported serious depression, and one-third had attempted suicide. Again, the TCG and SCG were very similar in the proportion of participants reporting these problems. The data for the four sites were in most ways similar to that for patient samples in other national studies of STI/STR programs.[16] The major difference was the report of prior drug abuse treatment by 72% of the TELE participants compared to less than 50% in other national studies.

Intervention Delivery

All sites were able to deliver the telephone interventions. The TELE counselor delivered the intervention to 155 (92%) of the 169 participants assigned to the TCG at least once, and for these 155, an average of 4.15 interventions was delivered over the three months. One week after discharge from the program, 69% of participants were reached. In the following weeks, the proportion of

TABLE 1. Recruitment, consent, and randomization by site

Site	Number approached	Number consented	Percent consented (%)	Number randomized	Percent randomized (%)
Site 1	277	152	55	120	79
Site 2	123	79	64	60	76
Site 3	99	81	82	60	74
Site 4	175	112	64	99	88
Total	674	424	63	339	80

TABLE 2. Characteristics at admission by site

Site	Site 1 (n = 120), %	Site 2 (n = 60), %	Site 3 (n = 60), %	Site 4 (n = 99), %	Total (n = 339), %
Male	67.5	73.3	48.3	64.6	64.2
Age under 30	29.2	23.3	31.7	27.3	28.0
African-American	52.5	30.0	26.7	18.2	33.9
Married	22.5	16.0	13.3	28.3	20.4
Drug use: thirty days					
Heroin/opioids	20.0	15.3	43.3	36.4	28.1
Cocaine	45.0	51.7	68.3	50.5	51.9
Barbituate/sedative	24.2	11.7	28.3	29.3	24.2
Amphetamines	9.2	3.3	1.7	24.2	11.2
Marijuana	38.3	31.7	48.3	50.5	42.5
Alcohol to intoxication	42.5	55.2	43.3	71.7	53.4
Prior alcohol admissions	65.0	80.7	51.7	61.6	64.3
Prior drug admissions	80.0	78.0	75.0	66.6	71.9
Chronic medical condition	42.5	36.7	53.3	40.4	42.8
Attempted suicide, lifetime	30.0	41.7	45.0	30.3	34.8
On probation/parole	32.5	30.0	38.3	30.6	32.5
Unemployed, thirty days	63.3	59.3	48.3	59.6	58.9

n = number randomized. Percentage is of non-missing values unless otherwise specified. Participants may be represented in multiple categories.

participants receiving an intervention varied from 47% to 62%. Of the four sites in TELE, only one failed to deliver the intervention to more than 40% of participants in a given week, and that occurred only one time. Over the twelve weeks of the intervention, the median number of calls attempted to deliver the seven interventions was 14, with the medians for sites ranging from 13 to 15.5 calls. The time required to deliver an intervention ranged from 5 to 30 minutes, with a typical intervention lasting 10 minutes. Despite concerns in the documentation of the delivery of interventions at one site, all participants across the four sites appeared to have a similar level of interventions attempted and delivered. Of the 664 interventions delivered to the TCG participants, 352 were recorded for fidelity review and sent electronically to the statistician. Of the 352 recorded calls, 275 (78% of recorded calls or 41% of all calls) were of acceptable sound quality for review. Based on a criterion that 75% of the positive elements and less than 25% of the negative elements were present, 70% of the calls reviewed were rated as acceptable. Because a number of calls needed to be made on phones without a recording hookup, the recorded calls may be a biased set of calls.

Follow-Up

It was possible to follow-up the participants despite their return to widespread, rural, and nonmetropolitan areas. Of the 339 TELE participants, 245 (72%) completed the week 13 follow-up interview, with approximately two-thirds being conducted in the community. Telephone interviews were needed to complete 39 of the 245 follow-ups. The proportion of randomized participants completing the self-reports was similar between the treatment groups (SCG, 72%; TCG, 70%). Four of these 245 participants had missing CRF fields needed to derive the primary self-report endpoint of treatment attendance, yielding 241 (71%) cases for analysis. The researchers could not locate 42 participants (12%) and located but could not contact 54 participants (16%). Sixteen were prisoners who could not be contacted because of IRB restrictions, and 14 participants (4.1 percent) were contacted but did not complete the interview. There was one death, and eight participants withdrew from the study. The completion rates were consistent across sites, ranging from 67% to 76%. Urine screens and breath alcohol tests were obtained for 214 of the 228 participants (94%) who were interviewed in person. Documentation of outpatient program attendance was collected for 282 of the 339 participants (83%). The rates of available records for documentation did not differ between the TCG (85%) and the SCG (81%), but the rates did vary among sites ranging from 68 to 95%. Releases were not obtained from 33 participants, and programs did not conduct a search for documentation for 22 other participants.

Outcomes

The primary intent of the intervention was to encourage enrollment in outpatient treatment after discharge. Two complementary endpoints were identified a priori

in the protocol as the most proximal and primary measures of outcome:

- Self-reported attendance at one or more counseling sessions at an outpatient community-based treatment program obtained in the 13-week follow-up personal interview
- Documentation of attendance at one or more counseling sessions at the outpatient community-based treatment program recommended in the continuing care plan obtained from program or state administrative databases

The documentation of attendance provides a check for accuracy of the self-report and outcome data for participants who could not be located for a personal interview. Participants with missing self-report and documentation data at follow-up were not included in the initial statistical analysis. In the second analysis, participants with missing data at follow-up were considered not to have attended counseling to account for the likelihood that "non-attendees" have a higher rate of missing data. Thus, two endpoint analyses were planned based on the source of data: self-report without imputation (n = 241) and documentation without imputation (n = 282). Each analysis was then repeated with imputation of no counseling attendance for missing self-report and documentation data with the full sample of 339 cases.

There was no evidence that the TCG intervention increased self-reported program attendance at outpatient counseling sessions compared to the SCG. This was true whether the participants lacking self-report data are considered missing in the analysis ($p = 0.891$), or if the participants missing data are considered to have not attended a session ($p = 0.954$; see Figure 1).

Conversely, there is a strong trend for an effect of the intervention when attendance was documented independently in administrative state or program databases. For participants with documented data available, the endpoint analysis (n = 282) showed 56% of the TCG participants were documented as attending at least one counseling session in the outpatient program, compared to 45% of the SCG participants ($p = 0.057$). When all participants (n = 339) are included, the percentages are 48% for the TCG and 37% the SCG ($p = 0.033$). For both sensitivity analyses, the p value approaches the multiple-comparison adjusted significance level of 0.025 as seen in Figure 2. When the main effects of documented attendance for all participants were modeled in a logistic regression, the intervention was nearly significant ($p = 0.023$).

Intervention effects on outcomes were also examined by the pre-defined subgroups of gender and ethnicity. Though no formal tests were planned to look at the interaction with treatment for these subgroups, the indication of an effect led us to begin to explore the interaction of the intervention and gender.[17] A logistic regression model was used to test for a significant interaction of intervention and gender (with main effects present in the model) on the self-reported and documented primary endpoints. In the model exploring the relationship of gender and intervention to the imputed record endpoint, the interaction between these two factors was not significant. Women showed a greater tendency to attend at least one outpatient counseling session ($p = 0.0016$).

Secondary outcomes were also examined, including drug use (self-report and urinalysis), alcohol use (self-report and breath analysis), and self-report of participation in twelve-step groups. These measures were selected because of their overall importance despite the potential effects of other moderating and mediating post-discharge factors. There was no evidence that the TCG intervention significantly impacted any of the five secondary efficacy

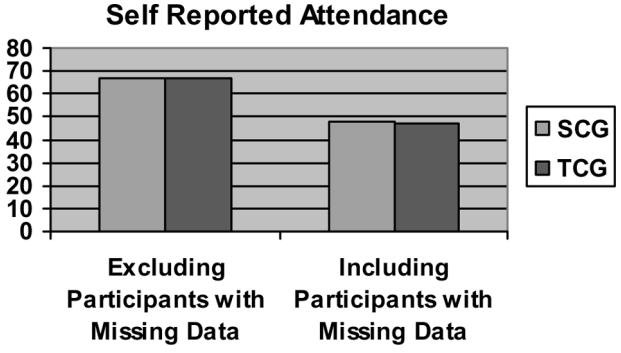

FIGURE 1. Primary Endpoints of Self-Report of Attendance at Least One Post-Discharge, Outpatient Counseling Session. Excluding Participants Without Follow-Up (n = 241) from the Denominator ($p = .89$); Including Participants Without Follow-Up (n = 339) in the Denominator ($p = .954$)

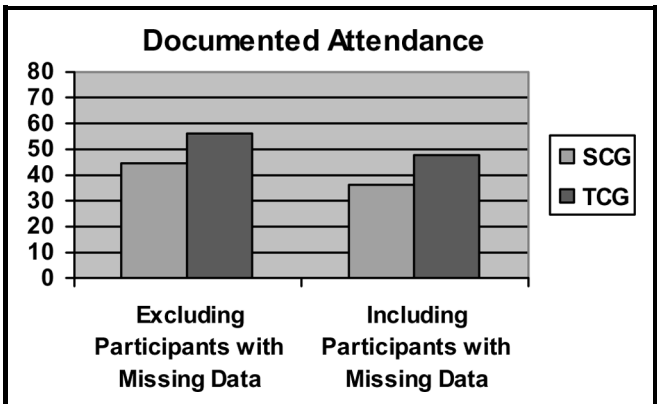

FIGURE 2. Primary Endpoints of Documented Attendance for at Least One Post-Discharge, Outpatient Counseling Session. Excluding Participants Without Follow-Up (n = 282) from the Denominator ($p = .057$); Including Participants Without Follow-Up (n = 339) in the Denominator ($p = .033$)

endpoints. Self-report of participation in twelve-step groups was very high (90%). Abstinence from drug use as based on urinalysis approached 50%, with the TCG (54%) tending to have better rates than the SCG (45%). Though this is intriguing, it did not reach statistical significance, and the higher proportion of TCG participants that did not provide urine samples makes speculation troublesome. Preliminary analysis of other outcomes including living environment, days of self-reported drug use, medical/physical functioning, employment, legal involvement, social/family functioning, mental health, and HIV/AIDS risk behavior do not indicate major differences between the TCG and SCG.

DISCUSSION

Trial Feasibility

The results of this study clearly demonstrated that a clinical trial design could be readily and efficiently integrated into publicly funded STI and STR program operations. About half of the admissions approached were randomized, and only 10% refused to participate, resulting in the completion of enrollment in 9 rather than the planned 12 months. Fewer than 5% of patients approached were not eligible because they could not be contacted by phone. More than 90% of the intervention participants were contacted at least once in the three months following their discharge, and at least 40% were contacted at each call point. Follow-up rates were greater than 70% across state and regional rural areas. IRB approval to contact participants in criminal justice settings would have increased follow-up rates to 80%. There was no difference in follow-up rates between the intervention and comparison groups.

Trial Design

Although a trial is feasible, major questions were raised about the appropriate design of a larger trial, the efficacy of the intervention tested, and the essential clinical features of continuing care plans and contacts. Large site effects were found in the characteristics of patients, the content of continuing care plans, and the availability of documentation of attendance and outcomes. The site effects suggest the need for a large, carefully selected sample of sites representative of the major approaches among the more than 2000 STI/STR programs currently in operation. A second concern is the discrepancy between self-report and documentation of program attendance especially for males. One potential explanation for the large discrepancy in the estimation of the intervention effect between self-reported and documented attendance is the finding that self-reports of attendance by 22% of the participants are inconsistent with the documentation in the records.

Intervention Utility

The potential efficacy of a simple telephone call intervention is a greater concern. The effect size of the TELE intervention may have been attenuated by the implementation of standard discharge procedures for participants in both groups, including a face-to-face meeting to review the individualized continuing care plans. A standard discharge assessment and continuing care-planning procedure can be hypothesized to be a critical factor in the effectiveness of the intervention. These rates in TELE were also much higher than those found in national studies of STI/STR treatment in 1989–1991, where only 14% of discharged patients reported attending outpatient treatment after discharge[4] and less than half reported involvement in self-help groups. Attempts are underway to obtain and examine administrative data on community treatment rates before and after the TELE protocol was implemented in each of the sites.

It is also critical to continue to develop strong evidence-based interventions to improve outcomes for patients after leaving STI/STR programs. The literature[3,17,18] has shown substantially lower relapse and re-addiction rates in patients who comply with prescribed care plans compared with those who do not. The Betty Ford Center has initiated a thorough epidemiological study of their process, which should contribute to the development of a more effective intervention. More recently, McKay et al.[19] used a stronger counseling-based intervention in a study with 349 alcohol- and cocaine-dependent patients (30% who met criteria for major depression) from two urban outpatient programs to provide 12 weeks of continuing care. The group receiving calls (also labeled TELE) was more likely to maintain abstinence. A multivariate analysis suggested that those who used during treatment and those with more severe problems required more in person contact.

Based on the critical need to improve engagement in continuing care and equivocal results of the TELE study, the next step appears to be to examine sound continuing care planning and procedures and link them with robust telephone contact interventions.[12] It is imperative to do everything feasible to assure that patients discharged from STI/STR programs continue to receive core substance abuse treatment services from an outpatient treatment program and any needed comprehensive services.

Applicability

The basic intervention used in this protocol appears to be feasible for those STI/STR programs where management and staff support the idea and want to implement it, the major concern being its questionable efficacy. Two hours of review of the manual, two hours of didactic training, accompanied by two role-plays and four practice interviews, produced acceptable fidelity. The call fidelity can be improved by quarterly review of the taped calls, accompanied by feedback to the counselor. The estimated

cost to implement this intervention would be generally the salary of one paraprofessional staff for an active continuing care caseload of 100–150 patients, a small training cost for each of them, and the cost of the telephone calls. Trained counselors should be available to meet with each client before discharge, and with the patient's agreement, arrange to make a series of supportive calls to the client over the three months following discharge. This feasibility supports the belief that the costs of implementing a sound, efficacious, continuing care and telephone contact are negligible compared to the cost of treatment readmission, hospitalization, or incarceration for relapsing clients. For example, if one of every ten patients avoids readmission, TELE would likely be cost-effective. Continuing care in outpatient treatment is an indicator of maintaining engagement, one of the three performance measures recommended by the Washington Circle group of providers, researchers, payors, and policy makers.[20] In 2005, national data on health care quality showed that only 39 percent of Medicaid-covered patients and 56 percent of patients with commercial coverage received services within seven days of discharge from hospitalization for mental illness.[21] Fewer than 10 percent of Medicaid patients and 15 percent of patients with commercial coverage received two additional counseling sessions after enrollment in substance abuse treatment programs.

CONCLUSIONS

Appropriate, strong telephone approaches to encourage compliance with well-developed continuing care plans should help build the critical clinical bridge between phases of treatment, not only for STI/STR programs but for any intervention requiring linkage among services.

This research was supported by cooperative agreement grant U10 DA13711 to Duke University U10 DA013710 to Wayne State University, and U10 DA013727 to the Medical University of South Carolina, from the National Institute on Drug Abuse for participation in the NIDA Clinical Trial Network.

REFERENCES

1. *National Survey of Substance Abuse Treatment Services (N-SSATS): 2004. Data on Substance Abuse Treatment Facilities*, DASIS Series: S-28, DHHS Publication No. (SMA) 05-4112. Rockville, Md.: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2005.
2. *Treatment Episode Data Set (TEDS). Highlights—2004. National Admissions to Substance Abuse Treatment Services*, DASIS Series: S-31, DHHS Publication No. (SMA) 06-4140. Rockville, Md.: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2006.
3. Hubbard RL, Marsden ME. Relapse to use of heroin, cocaine and other drugs in the first year after treatment. In: Tims FM, Leukefeld CG, eds. *Relapse and Recovery in Drug Abuse*. NIDA Research Monograph 72. Rockville, Md.: NIDA;1986:157–166.
4. Fiorentine R, Anglin MD. Does increasing the opportunity for counseling increase the effectiveness of outpatient drug treatment? *Am J Drug Alcohol Abuse*. 1997;23:369–382.
5. Etheridge RM, Hubbard RL, Anderson J, Craddock SG, Flynn PM. Treatment structure and program services in the Drug Abuse Treatment Outcome Study (DATOS). *Psychol Addict Behav*. 1997;11: 244–260.
6. Koumans AJR, Muller JJ. Use of letters to increase motivation for treatment in alcoholics. *Psychol Rep*. 1965;16:1152.
7. Koumans AJR, Muller JJ, Miller CF. Use of telephone calls to increase motivation for treatment in alcoholics. *Psychol Rep*. 1967;21:327–328.
8. Intagliata J. A telephone follow-up procedure for increasing the effectiveness of a treatment program for alcoholics. *J Stud Alcohol*. 1976;37:1330–1335.
9. Lash SJ, Blosser SL. Increasing adherence to substance abuse aftercare group therapy. *J Subst Abuse Treat*. 1999;16:55–60.
10. Breslin C, Sobell LC, Sobell MB, Buchan G, Kwan E. Aftercare telephone contacts with problem drinkers can serve a clinical and research function. *Addiction*. 1996;91:1359–1364.
11. Fitzgerald JL, Mulford HA. An experimental test of telephone aftercare contacts with alcoholics. *J Stud Alcohol*. 1985;46:418–424.
12. Bottorff JL, Johnson JL, Moffat B, Fofonoff D, Budz B, Groening M. Synchronizing clinician engagement and client motivation in telephone counseling. *Qual Health Res*. 2004;14:462–477.
13. Lamb S, Greenlick MR, McCarty D, eds. *Bridging the Gap Between Practice and Research: Forging Partnerships with Community-Based Drug and Alcohol Treatment*. Washington, D.C. Institute of Medicine, Committee on Community-Based Drug Treatment; 1998.
14. Laundergan JC. *Easy Does It: Alcoholism Treatment Outcomes, Hazelden and the Minnesota Model*. Duluth, Minn.: Hazelden Foundation; 1982.
15. Hochberg Y. A sharper Bonferroni procedure for multiple tests of significance. *Biometrika*. 1988;75:800–802.
16. Hubbard RL, Craddock SG, Flynn PM, Anderson J, Etheridge RM. Overview of one-year follow-up outcomes in the Drug Abuse Treatment Outcome Study (DATOS). *Psychol Addict Behav*. 1997;11: 261–278.
17. Haynes L, Back SE, Leimberger JD, Hubbard RL. Improving the transition from residential to outpatient addiction treatment: gender differences in response to supportive telephone calls. Presentation at the College on the Problems of Drug Dependence, Orlando, Fla., 2005.
18. Etheridge RM, Craddock SG, Hubbard RL, Rounds-Bryant JL. The relationship of counseling and self-help participation to patient outcomes in DATOS. *Drug Alcohol Depend*. 1999;57:99–112.
19. McKay JR, Lynch KG, Shepherd DS, Pettinati HM. The effectiveness of telephone-based continuing care for alcohol and cocaine dependence: 24-month outcomes. *Arch Gen Psychiatry*. 2005;62: 199–207.
20. Garnick DW, Lee MT, Chalk M, et al. Establishing the feasibility of performance measures for alcohol and other drugs. *J Subst Abuse Treat*. 2002;23:375–385.
21. National Committee for Quality Assurance. *The State of Health Care Quality 2006*. Washington, D.C.: National Committee for Quality Assurance; 2006.