Published in final edited form as:

J Subst Abuse Treat. 2008 March ; 34(2): 192–201.

Individual and system influences on waiting time for substance abuse treatment

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Abstract

Waiting time is a contemporary reality of many drug abuse treatment programs, resulting in substantial problems for substance users and society. Individual and system factors that influence waiting time are diverse and may vary at different points in the treatment continuum. This study assessed waiting time preceding clinical assessment at a centralized intake unit and during the period after the assessment but before treatment entry. The present study included 577 substance abusers who were enrolled in a large clinical trial of two brief treatment interventions in a midsize metropolitan area in Ohio. Bivariate analyses identified individual and system factors that influenced preassessment and postassessment waiting time, as well as total wait to treatment services. Multivariate analyses demonstrated that longer wait time for an assessment is influenced by being court referred, less belief in having a substance abuse problem, and less desire for change. A shorter wait to actually enter treatment is predicted by having a case manager, being more ready for treatment, and having less severe employment and alcohol problems. The different influences present during the two waiting periods suggest that assessment and treatment programs need to implement system changes and entry enhancement interventions that are specific to the needs of substance abusers at each waiting period.

Keywords

Substance abuse treatment; Waiting time; Case management; Motivational interviewing

1. Introduction

Substance abuse treatment has been shown to be an effective response to multiple problems associated with drug abuse and dependence, providing substantial personal and societal benefits. For individuals, treatment leads to significant reductions in substance use, criminal activity, and psychiatric symptoms, as well as increases in employment (Farabee, Leukefeld, & Hays, 1998; Hubbard, Craddock, & Anderson, 2003; Simpson, Joe, & Brown, 1997). The resulting benefits to society include social, financial, and quality-of-life gains, including reductions in criminal activity and health care expenditures, reduced dependence on public assistance, and increases in employment earnings (Ettner et al., 2006; Koenig et al., 2005; McCollister & French, 2003; Zarkin, Dunlap, Hicks, & Mamo, 2005). To accrue these benefits, however, substance abusers must first enter treatment, a significant challenge in many settings.

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One of the factors impeding treatment entry is waiting time—the period when individuals seeking treatment are delayed in receiving services or even denied referral for a service of interest (Appel, Ellison, Jansky, & Oldak, 2004; Farabee et al., 1998; Rotstein & Alter, 2006). Waiting time has been described as “a function both of whether prospective clients can get into the queue and how quickly they get off the queue and into treatment” (Friedmann, Lemon, Stein, & D'Aunno, 2003). Waiting time has been characterized as the period between clinic intake and actual program admission (Schottenfeld, O'Malley, Abdul-Salaam, & O'Connor, 1993), as the time between brief and full assessment, and as the period between full assessment and treatment initiation (Best et al., 2002). More recent conceptualizations of waiting time have included the time substance abusers must wait to initially present for treatment services once they or others recognize a problem (Chawdhary et al., 2007; Rotstein & Alter, 2006).

Given the potential benefits that result from attending treatment and the continuing problems associated with waiting for treatment, it is critical to establish an understanding of the factors that influence the cause and duration of waiting time for treatment services. This study is part of a larger National Institute on Drug Abuse-funded clinical trial “Reducing Barriers to Drug Abuse Treatment Services,” which was designed to examine the effectiveness of two interventions on linkage to and engagement in substance abuse treatment. The present study focuses on substance abusers who received assessment and referral at a centralized intake unit (CIU) and examines two distinct periods of waiting for substance abuse treatment: (1) the period between calling the CIU to schedule an assessment and actually receiving the assessment, and (2) the period between the assessment and the first clinical contact with a treatment provider. The study also considers the importance of these influences on total waiting time, which is the sum of preassessment and postassessment waiting. Bivariate analyses were first conducted to identify individual and system factors associated with each waiting period. Significant bivariate relationships were then included in multivariate analyses to identify the unique combination of factors that predict waiting time during each period.

1.1. Impact of waiting time

The likelihood of treatment-seeking substance abusers actually entering treatment after assessment is often <50% (Donovan, Rosengren, Downey, Cox, & Sloan, 2001; Stark, Campbell, & Brinkerhoff, 1990). In part, this is related to substance abusers' limited tolerance for treatment wait time, with longer waits associated with higher rates of pretreatment attrition (Festinger, Lamb, Kountz, Kirby, & Marlowe, 1995; Hser, Maglione, Polinsky, & Anglin, 1998; Kaplan & Johri, 2000). Among injection drug abusers who attempted to enter treatment, the majority (66.7%) did not go because they were placed on a waiting list (Pollini, McCall, Mehta, Vlahov, & Strathdee, 2006). Waiting time also affects treatment retention, although its effect is inconsistent. Longer delays before treatment admission have been associated with increased dropout rates after admission (Bell, Caplehorn, & McNeil, 1994; Claus & Kindleberger, 2002); however, other studies have not supported this relationship (Addenbrooke & Rathod, 1990; Best et al., 2002).

Waiting for treatment has negative implications for both substance abusers and society (Adamson & Sellman, 1998; Rotstein & Alter, 2006; Wenger & Rosenbaum, 1994). Substance users who wait for treatment services are less likely to enter treatment and often continue to use drugs, placing them at heightened risk for health complications such as overdose and exposure to infectious diseases such as hepatitis and HIV (Chawdhary et al., 2007; Festinger et al., 1995; Hser et al., 1998; Pollini et al., 2006). As an example, 35% of opiate abusers on a waiting list at the time of clinic intake reported resuming or initiating intravenous drug use by the time they were finally admitted to treatment (Schottenfeld et al., 1993). In some cases, individuals found jobs or moved, resulting in their losing a place on a program's waiting list.

Substance abusers waiting for treatment both before and after an assessment perceived treatment entry as a problem that was compounded by tangible individual-level and system-level barriers (Redko, Rapp, & Carlson, 2006). Furthermore, waiting lists undermine the opportunity to reach substance abusers during a possible “teachable moment” (Carlson, 2006).

Social costs that result from waiting for treatment include crime, unnecessary health care utilization, and the disbursement of social program benefits such as unemployment and welfare (Ettner et al., 2006; Hunkeler, Hung, Rice, Weisner, & Hu, 2001; Palepu et al., 2001). A study of heroin abusers found that some enrolled in detoxification programs while waiting for outpatient methadone services to reduce heroin use and minimize withdrawal (Wenger & Rosenbaum, 1994). Substance abusers waiting for methadone services participated in drug-related and property-related crimes, as well as prostitution, while on a waiting list (Adamson & Sellman, 1998). In contrast, getting substance abusers off a waiting list and into treatment reduced criminal behavior (Schwartz et al., 2006) and criminal justice costs (Koenig et al., 2005; McCollister & French, 2003; Zarkin et al., 2005).

1.2. Factors associated with waiting time

Client characteristics such as gender and age have not consistently been associated with waiting time. Following assessment at a CIU, women waited longer than men to enter both outpatient and residential treatment services, resulting in lower odds of treatment entry (Downey, Rosengren, & Donovan, 2003). Other studies, however, have not confirmed a relationship between gender and waiting time (Brown, Hickey, Chung, Craig, & Jaffe, 1989; Chawdhary et al., 2007; McCaughrin & Howard, 1996). Similarly, age has been associated with longer waiting times in some studies (McCaughrin & Howard, 1996) but not in others (Brown et al., 1989; Friedmann et al., 2003).

Both alcohol abuse and involvement with the criminal justice system have been associated with longer waiting (Brown et al., 1989; McCaughrin & Howard, 1996). Among cocaine abusers waiting for residential treatment, only criminal justice involvement predicted waiting longer than 4 months for treatment (Brown et al., 1989). Other factors such as treatment motivation, reduction in drug use, and psychological symptoms were not associated with waiting. Treatment-seeking cocaine abusers did not evidence a relationship between individual characteristics such as motivation and depression and delay to first treatment appointment.

The role of system factors on waiting time has also received attention. A treatment accessibility analysis of 326 outpatient substance abuse treatment programs found that organizations with high staff caseloads and longer-than-average lengths of stay had longer waiting periods, whereas those with a greater percentage of clients on public assistance had shorter wait times to treatment (McCaughrin & Howard, 1996). In contrast, a number of other organizational-level variables were unrelated to wait time, including organization ownership (private vs. public), acceptability (extent of referrals from different sources), accommodation (degree of difficulty contacting staff outside normal hours), services diversity (percentage of clients receiving other services), and competitive stance (extent to which competition for clients is based on cost, quality, and access) (McCaughrin & Howard, 1996).

Program ownership and managed care status have also been associated with treatment accessibility. Private for-profit programs were twice as likely to provide treatment on demand compared to methadone maintenance programs and programs serving indigent populations (Friedmann et al., 2003). Public programs were less likely to turn clients away than private programs, suggesting that although waiting time may be longer in the public sector, services are still available if substance abusers are willing to wait (Friedmann et al., 2003). Treatment programs with midrange managed care penetration were the least likely to support treatment

access, compared to programs with lower and higher numbers of managed care clients (Alexander, Nahra, & Wheeler, 2003).

System and individual influences on wait time are generally viewed in the context of a single period during the wait time continuum, either the time before assessment *or* the time between assessment and treatment entry. Studies have not compared and contrasted the influences that exist in the two waiting periods. Even when waiting time was conceptualized as two periods, only total wait time was used to identify characteristics that were associated with waiting (Best et al., 2002).

2. Methods

2.1. Setting and sampling

This study was undertaken as part of a National Institute on Drug Abuse-funded clinical trial “Reducing Barriers to Drug Abuse Treatment Services” (RBP) to test interventions to improve linkage and engagement. Substance abusers who had just received an assessment and referral at a CIU were randomly assigned to: (1) the CIU's standard of care group; (2) one session of motivational intervention (Heather, 2005); or (3) five sessions of strengths-based case management (Rapp, 2006; Siegal et al., 1995). Two outcomes were used to determine the interventions' effectiveness. Treatment *linkage* was defined as attendance at a program's first clinical or therapeutic session within 90 days of assessment at the CIU. Treatment *engagement* was the length of time, or duration, that substance abusers continue with treatment.

The study is located in a CIU in Dayton, OH, a mediumsized Midwestern metropolitan area. The CIU is the county's only point of entry for uninsured individuals seeking treatment for substance abuse and mental health problems. Individuals who are seeking publicly funded alcohol and drug abuse treatment services must first contact the CIU to schedule an assessment appointment. Assessments are scheduled by administrative office staff. Scheduling staff are guided in assigning assessment dates by administrative rules promulgated by the single state agency for substance abuse issues. The rules establish the maximum period allowable for the preassessment waiting period: pregnant substance abusers, 2 days; injection drug abusers, 2 days; dually diagnosed (with mental health problem) substance abusers, 5 days; and other substance abusers, 7 days. There are no administrative rules that assign a maximum length of time that substance abusers are allowed to wait before entering treatment.

Assessment therapists conduct psychosocial, mental health, and substance abuse assessments to determine the nature and extent of clients' problems. Clients are then referred to an appropriate level of care within the community treatment system based on American Society of Addiction Medicine (2001) criteria and situational factors such as treatment accessibility and client preference. Referrals are made to eight state-certified specialty substance abuse treatment programs. Following CIU assessment, clients must wait approximately 7 days before they call back to the CIU and receive notice of their actual treatment admission date from a care coordinator.

To be eligible for the study, subjects must: (1) be ≥ 18 years; (2) have been diagnosed with a substance abuse disorder, dependence disorder, or both, using criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (American Psychiatric Association, 2000); (3) not have been diagnosed with schizophrenia or any other psychotic disorder; and (4) have been referred to either residential or outpatient substance abuse services. Participants are not eligible for the study if they had been diagnosed with only alcohol abuse or alcohol dependence.

Eligible subjects are referred to the larger study's research staff by CIU assessment therapists. RBP research assistants provide a summary of the project. If individuals are interested and eligible, an informed consent approved by the university's institutional review board is read to them. The confidential nature of the study is stressed, as is the fact that refusal to participate does not affect CIU services for which an individual is otherwise eligible. Individuals who wish to enter the study then participate in a baseline interview lasting approximately 1.5 hours. Most interviews take place immediately following a clinical assessment, although some potential subjects are scheduled to return at a later time. Follow-up interviews are conducted at 3 and 6 months following baseline. For each interview, subjects are paid a USD30 stipend for their time spent answering questions.

2.2. Sample

As of September 2006, data have been collected for 604 respondents. Twenty-seven cases were excluded from the analyses because they were referred to three treatment programs for which program data were not available. The resulting sample of 577 respondents comprised 63.6% male, 51.5% White, and 47.7% Black. The mean age of subjects was 33.57 years ($SD = 10.37$; range, 18–64). Almost 31% (30.7%) of the respondents were court referred, and 36.1% were unemployed. Nineteen percent (19.4%) of the sample was homeless, and 31.8% of the participants were referred to residential treatment by CIU assessment therapists. Subjects in the study were most likely to identify their primary drug of choice as crack cocaine or powder cocaine ($n = 252$; 43.7%); almost a quarter identified heroin as their drug of choice ($n = 135$; 23.4%). Eighty-seven subjects (15.1%) stated that marijuana was their drug of choice. Although 65 subjects (11.3%) stated that their drug of choice was alcohol, the subjects still met eligibility guidelines (i.e., they were diagnosed as having a nonalcohol substance abuse, dependence disorder, or both). The remaining subjects described some other substance as their drug of choice ($n = 38$; 6.6%); other substances included opiates other than heroin, sedatives, and methamphetamine.

The subjects represented in this analysis had been randomly assigned to three groups as follows: standard of care, 202; motivational intervention, 184; strengths-based case management, 191. The resulting three groups were not significantly different except on the Addiction Severity Index (ASI) measure of psychiatric severity and Problem Recognition factor from the Pretreatment Readiness Scale (PRS).

2.3. Measures

Baseline assessment collects self-report data on individual-level factors that have been associated with waiting time. Demographic characteristics, including gender, age, race, homeless status (homeless or not), referral source (court referred or not), and prior treatment history, were obtained from the Reducing Barriers Baseline Interview. The baseline interview also includes composite measures (range, 0–1) from the ASI, version 5 (McLellan, 1992), which were used to assess problem severity in seven life areas related to drug and alcohol use, as well as legal, employment, psychiatric, social/family, and medical functioning. Composite scores were used as predictors of substance abuse functioning because they are more inclusive than unitary measures (such as drug of choice or number of days of drug use) that represent only one dimension of substance use.

Two additional survey instruments, administered as part of the baseline battery of assessments, provide data on additional individual-level factors that are potentially associated with waiting time. The PRS was developed to assess readiness for treatment in substance abusers assessed and referred to treatment who had not yet entered treatment (Rapp et al., in press). Summary scores from each of the factors were used in this analysis. As a result of factor analyses, 20 items were retained in four factors: (a) Problem Recognition (10 items; 10–50) assesses an

individual's attitude toward drug use; (b) Desire for Change (3 items; 3–15) gauges perceived need for change; (c) Treatment Readiness (4 items; 4–20) measures the level of readiness for seeking treatment; and (d) Treatment Reluctance (3 items; 3–15) describes hesitancy to enter treatment.

The 59-item Barriers to Treatment Inventory (BTI) was developed specifically for this trial to identify barriers that substance abusers experienced prior to treatment (Rapp et al., 2006; Xu, Wang, Rapp, & Carlson, in press). The summary scores from each of the factors were used in this analysis: (a) Problem Absence (six items; 6–30) assesses an individual's attitude toward one's drug use; (b) Negative Social Support (five items; 5–25) gauges the belief of family and peers that there is no need for treatment; (c) Treatment Fear (four items; 4–20) measures individuals' concerns about being in treatment; (d) Privacy Concerns (three items; 3–15) represents individuals' reticence to talk about themselves; (e) Committed Lifestyle (two items; 2–10) represents immersion in a drug-using lifestyle; (f) Time Conflict (four items; 4–20) gauges scheduling difficulties; (g) Treatment Accessibility (four items; 4–20) indicates the levels of access to drug abuse treatment services; and (h) Admission Difficulty (two items; 2–10) assesses facility resources and clients' waiting time for treatment. The BTI was read to subjects by a research assistant and took an average of 15 minutes to complete. Subjects were asked to indicate on a 5-point scale how much they believed that each barrier would affect their entry into treatment (1 = *disagree strongly*; 2 = *disagree*; 3 = *uncertain*; 4 = *agree*; 5 = *agree strongly*).

The Problem Recognition factor of the PRS and the Problem Absence factor in the barriers inventory both measure the degree to which substance abusers view problems related to their substance use. Scale items present either an affirmative view of having problems (Problem Recognition) or a dissenting view of having problems (Problem Absence). The two factors are strongly and negatively correlated ($r = -.75$).

Treatment system factors were obtained from five in-county substance abuse treatment programs. Two sources were used to obtain these data. The Brief Drug Abuse Treatment Cost Analysis Program (French, 2002; French, Dunlap, Zarkin, McGeary, & McLellan, 1997) was used to collect data on average daily census, average daily staff caseload, and number of active cases in a program. The project-specific Services Tracking Record was used to collect data from subjects' medical records, including service modality (outpatient or residential) and dates of services, assessment, and first clinical contact. System factor data collected from each treatment program included the following: (1) number of active cases; (2) average daily census; (3) average daily staff caseload; and (4) service modality referred to by the CIU. These factors have been shown to have an impact on waiting time (McCaughrin & Howard, 1996).

The dependent measures in this study are two specific periods of the waiting time continuum: preassessment waiting period and postassessment waiting period, as well as total wait time. *Preassessment waiting period*, in days, was derived from a single question in the baseline interview, "Once you called the CIU for your current assessment, how long did it take for you to actually come in for an appointment?"

For subjects who linked with treatment, *postassessment waiting* was calculated as the difference, in days, between assessment and the first clinical contact at a treatment program. For subjects who did not link with treatment, the maximum postassessment waiting period was coded as 90 days. The decision to truncate postassessment wait time was based on state administrative rules requiring that a new assessment be conducted if treatment entry does not occur within 90 days. In effect, waiting time ends at 90 days, and a new assessment and potential waiting period begin. *Total waiting period* was the sum of preassessment and postassessment waiting times, in days.

Study group assignment (standard of care, motivational interviewing, and strengths-based case management) was not included in the analyses of the preassessment waiting period because random assignment took place after the assessment had been conducted.

2.4. Statistical procedures

Individual and system predictors of the preassessment, postassessment, and total waiting periods were analyzed using bivariate and multivariate procedures in the Statistical Analysis Program (SAS Institute, 1999). Given the exploratory nature of this study, relationships between each individual and system factors and the three waiting periods were first examined using bivariate and zero-order correlations. This initial step provided preliminary information on the specific factors associated with each waiting period. Variables significant at $p < .05$ were included in subsequent multivariate analyses for each period. Linear multivariate regression was employed to identify unique predictors of the preassessment, postassessment, and total waiting periods.

3. Results

3.1. Bivariate analyses

3.1.1. Preassessment wait time—The mean preassessment waiting period was 4.38 days ($SD = 4.58$; range, 0–30 days). Several variables had significant bivariate associations with this waiting period (Table 1). Being homeless and older were associated with shorter wait times; being court referred was related to a longer preassessment wait ($r = .301, p < .001$). Two of seven barriers factors (Problem Absence and Time Conflict) were associated with longer preassessment wait times ($r = .089, p < .05$; $r = .139, p < .001$) as were three of four motivation factors: lower scores on Problem Recognition and Desire for Change, and higher scores on Treatment Reluctance. More severe alcohol and drug use problems and problems in psychiatric functioning were related to shorter waiting time (Table 1).

All four system factors were significantly associated with preassessment wait. Programs with a greater number of active cases, higher average daily census, and higher average daily staff caseload were associated with longer waits. Referral to outpatient treatment was also associated with longer wait time ($r = -.194, p < .001$).

The β weights associated with attitudinal individual characteristics (Time Conflict, Problem Recognition, Desire for Change, and Treatment Reluctance) were similar to those of program characteristics (number of active cases, average daily census, and average daily staff caseload).

3.1.2. Postassessment wait time—The mean postassessment wait for treatment services was 65.40 days ($SD = 30.05$; range, 0–90 days). Being male was related to shorter postassessment wait ($r = -.079, p < .05$), whereas being homeless was associated with a longer wait during this period ($r = .104, p < .05$). Assignment to case management was associated with shorter waiting time ($r = -.128, p < .01$). Three barriers factors (Problem Absence, Time Conflict, and Treatment Accessibility) were positively associated with longer wait time. Among the motivation factors, higher Treatment Readiness scores were associated with a shorter wait, whereas greater Treatment Reluctance was related to longer waits. The only ASI composites associated with postassessment waiting time were alcohol and employment severity, with higher scores related to a longer wait ($r = .140, p < .001$; $r = .141, p < .001$). Average daily staff caseload was the only system variable significantly associated with postassessment wait ($r = .082, p < .05$).

3.1.3. Total wait time—The mean total wait time for treatment services was 69.77 days ($SD = 30.51$; range, 3–120 days). Men had shorter total waits, and homeless subjects had longer

waits. Again, case management assignment was related to a shorter overall wait ($r = -.127, p < .01$), whereas subjects assigned to the control condition waited longer ($r = .082, p < .05$). Similar to the postassessment period, Problem Absence, Time Conflict, and Treatment Accessibility were all positively related to total waiting time. Greater Problem Recognition, Desire for Change, and Treatment Readiness were related to shorter total waits, whereas greater Treatment Reluctance was associated with longer waits. Among ASI composites, greater employment and alcohol severity scores were associated with longer total wait, whereas more severe drug scores were related to shorter total wait. The total number of active cases and the average daily staff caseload were both positively related to total wait time.

3.2. Multivariate analyses

3.2.1. Preassessment wait time—Four of 15 measures that demonstrated significant bivariate relationships with preassessment wait time remained statistically significant in multivariate analysis (Table 2). Among demographic factors, being older predicted shorter wait time ($\beta = -.105, p < .05$), whereas court-referred subjects waited longer ($\beta = .221, p < .001$). Longer wait time was influenced by the increasing belief that no substance abuse problem existed and by less desire for change. None of the ASI composite scores or system factors was a significant predictor of preassessment wait.

3.2.2. Postassessment wait time—Five factors were significant predictors of postassessment wait. The only demographic factor was homelessness, with homeless subjects waiting longer during this period ($\beta = .089, p < .05$). Being more ready for treatment and having a case manager predicted a shorter postassessment wait. In contrast, more severe alcohol and employment problems were significant predictors of longer waiting during this period.

3.2.3. Total wait time—Gender was the only predisposing measure with a significant bivariate relationship to total wait time, but it was not significant at the multivariate level (Table 2). Among barriers and motivation factors, only Treatment Readiness was significant, predicting a shorter total wait. Having a case manager also predicted less overall wait for treatment services. In contrast, greater employment and alcohol severity ($\beta = .12, p < .01$; $\beta = .14, p < .05$) predicted longer total waiting. Higher average daily staff caseload predicted longer total wait, whereas treatment programs with a greater number of clients had shorter total waiting periods.

4. Discussion

Waiting time is a reality for substance abusers seeking both assessment and treatment services. In this study, the wait for services was conceptualized as two phases, the first being a preassessment period that lasted from the time a substance abuser called a CIU to the time one was assessed, and the second being a postassessment period that lasted from assessment to actual treatment entry. The view of waiting as two phases, influenced by different characteristics, expands on previous studies that viewed waiting as either preassessment (Chawdhary et al., 2007) or post-assessment (Friedmann et al., 2003). Elsewhere, only total wait time was used in predicting alcohol and drug outcomes (Best et al., 2002). In this study, the substantial difference between the length of preassessment and postassessment waiting (4 and 65 days) suggests that different characteristics would be influential during the two periods.

4.1. Preassessment waiting

Bivariate associations with longer preassessment waiting time were dominated by indicators that signified a lower readiness to begin the process of entering treatment. These included being court referred and believing that there were time conflicts to entering treatment. Early stages of motivation (Problem Recognition and Desire for Change) also influenced the length of wait.

There was no clear indication that either individual or system characteristics were more powerful in contributing to longer waiting time.

The finding that treatment program characteristics influenced waiting during the *preassessment* period was unexpected. Having more active cases, higher daily census, and higher caseloads may be proxies for treatment programs operating at or near capacity. It was expected that these system influences would exert an influence during the waiting time following substance abusers' assessment and referral. We can only speculate that program-level influences before the assessment were the result of treatment program staff requesting that the CIU forestall assessments, up to the mandated limits, until treatment slots were available. Word-of-mouth communication to CIU staff may have led to the same result. Referral to outpatient treatment also predicted longer waiting time, possibly a consequence of an inadequate number of treatment slots. In addition, there may be an unidentified profile of substance abusers that are more likely to be referred to outpatient treatment; outpatient treatment may be an indicator of the profile.

When all characteristics were controlled, involvement in the criminal justice system was a predictor of preassessment waiting time, as were early stages of motivation for treatment, specifically Problem Recognition and Desire for Change. Longer wait for an assessment among court-involved substance abusers was similar to that found earlier (Brown et al., 1989). It may be that being mandated to attend treatment, as well as not seeing a problem or need to change, resulted in cancelled appointments and other delays that led to a longer wait. It is also possible that longer waiting was the result of hearings and other court actions. Administrative staff at the CIU may have assigned a longer wait to substance abusers who showed little motivation or who were court referred.

4.2. Postassessment waiting

Characteristics that influenced the postassessment waiting period were similar to those influencing preassessment wait in bivariate analyses. Gender replaced age as the only predisposing characteristic that exerts an influence on waiting. Treatment Readiness, a later stage of motivation, replaced Problem Recognition and Desire for Change. Homelessness predicted longer waits as well. More severe employment and alcohol problems led to a longer wait as did average daily caseload, the only treatment program characteristic present. Subjects who were assigned to the case management group experienced shorter waiting times for treatment.

When all variables were controlled in multivariate analyses, characteristics different from those present during the preassessment period were influential or had different effects. Homelessness was associated with a longer wait to get into treatment, although it had led to a *shorter* wait for an assessment. The different role for homelessness may be attributable to the fact that, unlike for assessment, there is no mandated requirement to facilitate treatment entry for homeless substance abusers; homeless substance abusers are frequently at a disadvantage in taking the necessary steps to enter treatment. Recontacting the CIU to learn of a treatment start date can be a formidable problem; frequently, several attempts are required, and failure to make contact may be perceived as resistance rather than a problem connected to homelessness. Similarly, residential treatment programs frequently have preadmission group sessions that potential clients must attend. Failure to attend one of these sessions may result in a treatment entry date being withdrawn. Lack of transportation and a daily need to find shelter can interfere with group attendance, resulting in removal from the waiting list. Structured assistance such as that provided by case managers might effectively reduce the barriers homeless persons face in entering treatment.

Longer postassessment wait was influenced by less readiness to enter treatment, whereas the first two stages of the change process (Problem Recognition and Desire for Change) predicted *preassessment* wait. This suggests that substance abusers may have had a very specific concern about entering treatment itself rather than overall lack of motivation. Reluctance to enter treatment may be the result of tangible barriers such as lack of childcare or fear of the treatment experience itself.

4.3. Total waiting time

Total waiting time represents the entire period between substance abusers' call for an assessment appointment and the time they either enter treatment or have waited 90 days and are no longer on a waiting list. The characteristics of this total period are similar to those of the postassessment wait, predicted by substance abusers being less ready for treatment, having more severe problems relative to alcohol use and employment during the preceding 30 days, and *not* having a case manager. Among system factors, a *higher* average daily census at a treatment program predicted *less* waiting time, whereas higher average caseloads predicted *longer* waits. Smaller treatment programs with fewer staff may have a larger average caseload and take longer to accommodate new clients.

4.4. Motivational interviewing and strengths-based case management

The current study was part of a larger trial to establish the effectiveness of two brief interventions—a motivational intervention and strengths-based case management—on improving treatment linkage and engagement. The one-session motivational intervention, delivered at the beginning of the postassessment period, had no direct influence on waiting for treatment admission. It is possible that the motivational intervention exerted its influence on waiting by improving readiness for treatment, a factor that did predict less wait time. Motivational interventions may be valuable in improving substance abusers' readiness but do not offer the support necessary for those who have barriers such as lack of transportation or inability to pay for treatment.

Strengths-based case management was designed to address multiple individual and system barriers substance abusers often face while seeking treatment—barriers that can lead to increased time spent on waiting lists (Hser et al., 1998; Rapp et al., 2006). There are several possible reasons why subjects assigned to the strengths-based case management group had shorter postassessment wait times. One barrier to linking with treatment is the requirement that substance abusers call the CIU several days following their assessment to find out the actual start date for treatment. Case managers mitigate this potential barrier by getting the date and time from the assessment therapist and delivering it to the client. Case managers can advocate for an earlier treatment admission date, thereby reducing the time clients must wait to receive services after an assessment. Case managers also remind clients about their admission date and help arrange childcare or transportation to ensure that these potential barriers do not impede treatment entry and thereby make the postassessment waiting period longer.

Despite offerings of tangible assistance, substance abusers will have varying levels of motivation to enter treatment. For that reason, the strengths-based approach to case management is also designed to improve substance abusers' perceived self-efficacy, leading to better motivation and optimism about treatment outcomes (Rapp, 2006; Siegal et al., 1995). These findings are congruent with other research demonstrating that strengths-based case management facilitated linkage with medical care and improved treatment retention during aftercare services (Gardner et al., 2005; Rapp, Siegal, Li, & Saha, 1998; Rapp et al., 2006).

4.5. Limitations

The subjects in this study represent a convenience sample of substance abusers recruited at a CIU. This setting is available only to substance abusers who are eligible for public financial support to attend treatment. It is possible that the individual and system factors that influence the waiting time continuum within the context of a CIU are different from those of other assessment and treatment settings; waiting time may be different among substance abusers with more resources such as insurance. Furthermore, we did not know whether the time individual substance abusers spent waiting for an assessment or treatment was due to individual or system factors.

The system factors included in this study are limited to indicators of program capacity. Future research should include a broader mix of system factors that could potentially influence waiting time at different points in the treatment continuum. Efforts need to be made to discover both formal structural and policy considerations, and subtle influences of informal factors (e.g., staff reaction to clients who repeatedly receive assessments, word-of-mouth communication).

Only a small amount of the variance in preassessment and postassessment waiting times was explained by predis-posing attributes, system characteristics, current functioning, treatment readiness, and subjects' perceived barriers. The limited ability to explain waiting time has been a consistent problem (Brown et al., 1989; Chawdhary et al., 2007). Different policy mandates, treatment structures, and funding streams in different geographical areas may make it difficult to find common causes of waiting time. The informal attributes that influence waiting time may be very difficult to quantify; qualitative methods such as participant observation, focus groups, and ethnographic interviews may help elucidate these dynamics.

5. Conclusion

The results of this study provide a cross-sectional view of individual and system influences that predict the length of time in the two phases of waiting for substance abuse treatment. We found individual and system influences that were different between the two periods, but they explained a relatively small amount of the variance in time spent waiting. This may be due to a combination of individual-centered and system-centered influences that exist at both formal and informal levels.

Optimally, waiting time both before and after an assessment would be eliminated completely, thereby avoiding individual and societal problems that are a consequence of delayed entry. Eliminating waiting times by providing treatment on demand would require significant changes on how treatment is funded and structured. Absent such changes, it is incumbent on assessment and treatment providers to respond effectively to barriers that individual substance abusers have, whether individual or system based.

Acknowledgments

The authors acknowledge research support from the National Institute on Drug Abuse (grant 5R01 DA15690); cooperation from Samaritan Behavioral Health and one of its programs, Samaritan CrisisCare (SCC); and the support of SCC staff, including Sue McGatha, Ruth Addison, and Christine Ferens.

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Table 1

Zero-order and bivariate correlations of individual and system characteristics with two waiting time phases and total waiting time ($N=577$)

Characteristics	Preassessment wait time	Postassessment wait time	Total wait time
Demographic			
Gender	<i>ns</i>	-.079 *	-.080 *
Age	-.177 ***	<i>ns</i>	<i>ns</i>
Race	<i>ns</i>	<i>ns</i>	<i>ns</i>
Court referred	.301 ***	<i>ns</i>	<i>ns</i>
Prefer to receive no treatment	<i>ns</i>	<i>ns</i>	<i>ns</i>
Homeless	-.153 ***	.104 *	.080 *
History of prior treatment	<i>ns</i>	<i>ns</i>	<i>ns</i>
Clinical			
Problem Absence	.089 *	.126 **	.138 ***
Negative Social Support	<i>ns</i>	<i>ns</i>	<i>ns</i>
Treatment Fear	<i>ns</i>	<i>ns</i>	<i>ns</i>
Privacy Concerns	<i>ns</i>	<i>ns</i>	<i>ns</i>
Time Conflict	.139 ***	.087 *	.107 *
Treatment Accessibility	<i>ns</i>	.105 *	.113 **
Admission Difficulty	<i>ns</i>	<i>ns</i>	<i>ns</i>
Problem Recognition	-.105 *	<i>ns</i>	-.086 *
Desire for Change	-.112 **	<i>ns</i>	-.088 *
Treatment Readiness	<i>ns</i>	-.143 ***	-.151 ***
Treatment Reluctance	.118 **	.102 *	.118 **
Medical composite	<i>ns</i>	<i>ns</i>	<i>ns</i>
Employment composite	<i>ns</i>	.142 ***	.142 ***
Alcohol composite	-.079 *	.140 ***	.126 **
Drug composite	-.171 ***	<i>ns</i>	-.099 *
Legal composite	<i>ns</i>	<i>ns</i>	<i>ns</i>
Family composite	<i>ns</i>	<i>ns</i>	<i>ns</i>
Psychiatric composite	-.123 **	<i>ns</i>	<i>ns</i>
Program			
Referred to residential treatment	-.195 ***	<i>ns</i>	<i>ns</i>
Total number of active cases	.147 ***	<i>ns</i>	.079 *
Average daily census	.154 ***	<i>ns</i>	<i>ns</i>
Average daily staff caseload	.178 ***	.083 *	.108 **
Group assignment			
Control	+	<i>ns</i>	.082 *
Motivational intervention	+	<i>ns</i>	<i>ns</i>
Case management	+	-.128 **	-.127 **

Notes. (+) Group assignment was not included as a possible predictor of preassessment waiting time because subjects had not been assigned to these groups until after the assessment.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Multivariate relationship of individual and system characteristics with two waiting time phases and total waiting time ($N = 577$)

Characteristic	Preassessment wait time	Postassessment wait time	Total wait time
Demographic			
Gender	—	<i>ns</i>	<i>ns</i>
Age	-.105 *	—	—
Court referred	.221 ***	—	—
Homeless	<i>ns</i>	.089 *	<i>ns</i>
Clinical			
Problem Absence	-.132 *	<i>ns</i>	<i>ns</i>
Time Conflict	<i>ns</i>	<i>ns</i>	<i>ns</i>
Treatment Accessibility	—	<i>ns</i>	<i>ns</i>
Problem Recognition	<i>ns</i>	—	<i>ns</i>
Desire for Change	-.108 *	—	<i>ns</i>
Treatment Readiness	—	-.119 **	-.119 **
Treatment Reluctance	<i>ns</i>	<i>ns</i>	<i>ns</i>
Employment composite	—	.123 **	.120 **
Alcohol composite	<i>ns</i>	.151 ***	.157 ***
Drug composite	<i>ns</i>	—	<i>ns</i>
Psychiatric composite	<i>ns</i>	—	—
Program			
Referred to residential treatment	<i>ns</i>	—	—
Total number of active cases	<i>ns</i>	—	-.343 *
Average daily census	<i>ns</i>	—	—
Average daily staff caseload	<i>ns</i>	<i>ns</i>	.423 **
Group assignment			
Control	—	—	<i>ns</i>
Motivational intervention	—	—	—
Case management	—	-.135 ***	-.117 **
Adjusted R^2	.122	.081	.083

Notes. All values represent standardized coefficients.

(—) Characteristics that were not significant at zero-order level and not entered into multivariate analyses.

ns, Characteristics that were significant at zero-order level but not at multivariate levels.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.