
Completing Substance Abuse Treatment in Child Welfare: The Role of Co-Occurring Problems and Primary Drug of Choice

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A significant number of substance-abusing parents in the child welfare system do not complete substance abuse treatments. Consequently, their children experience longer stays in substitute care settings, and the risk of the termination of parental rights is increased. This study identifies and determines the specific factors that explain the completion of substance abuse treatment for substance-abusing caregivers in child welfare. The sample includes 871 caregivers enrolled in the Illinois Alcohol and Other Drug Abuse waiver demonstration. Approximately 22% of these caregivers successfully completed all required levels of substance abuse treatment. The multivariate models indicate that age, employment status, and legal involvement were significantly associated with the likelihood of completing substance abuse treatment. Heroin users were significantly less likely to complete treatment as compared with alcohol, cocaine, and marijuana users. The findings are discussed in terms of policy and practice implications for public child welfare systems.

Keywords: *substance abuse; child welfare; treatment completion; co-occurring problems; types of drug*

The primary purpose of child welfare is to protect children from the risk of maltreatment and to strengthen families to care for their children (Pecora, Whittaker, Maluccio, Barth, & Plotnick, 2000). Yet achieving this purpose is often obstructed by parental

substance abuse. Addiction to alcohol and drugs interferes with appropriate parenting practices and increases the risk of child maltreatment (Famularo, Kincherff, & Fenton, 1992; Jaudes, Ekwo, & Van Voorhis, 1995). Children of substance-abusing caregivers are 3 times more likely to experience physical abuse and neglect (Chaffin, Kelleher, & Hollenberg, 1996). It is not surprising that parental substance abuse is identified as a major contributing factor for the placement of children in foster care and a key barrier to family reunification (U.S. Department of Health and Human Services [USDHHS], 1999). Caregivers who fail to engage in or complete substance abuse treatment experience significant delays with regard to family reunification (Besinger, Garland, Litrownik, & Landsverk, 1999). In short, children from substance-abusing families are more likely to enter foster care, spend longer periods of time in foster care, and are less likely to achieve family reunification relative to children from non-substance-abusing homes (USDHHS, 1999). Thus, the mission of child welfare depends in large part on the success in providing services to address parental substance abuse.

Very few substance-abusing caregivers involved with the child welfare system enter and complete substance abuse treatment (Substance Abuse and Mental Health Services Administration [SAMSHA], 2002; U.S. General Accounting Office [USGAO], 1998). The USGAO (1998) conducted a survey of open foster cases in California and Illinois. That study focused on a group of substance-abusing caregivers with children in the foster care system—123 mothers in California and 188 mothers in Illinois. Only 8.1% of the mothers ($n = 10$) in California and

10.6% of mothers ($n = 19$) in Illinois successfully completed their treatment requirements (USGAO, 1998). This problem is not limited to caregivers in the child welfare system. A recent report of the SAMHSA's 2002 National Survey on Drug Use and Health estimates that 94% of people with substance use disorders do not receive treatment. Moreover, even for those that enroll in treatment, dropouts and relapses are common experiences (Hser, Anglin, Grella, Longshore, & Predergast, 1997).

Such low success rates with regard to the completion of substance abuse treatment are of great concern to child welfare systems because substance abuse treatment is the key intervention that has proven to be effective in reduction of use and recovery from substances (USDHHS, 1999). In this regard, the majority of caregivers who are not able to succeed in substance abuse treatment are less likely to recover from substance use and be able to provide adequate care for children. Moreover, without the success in substance abuse treatment, they are at greater risk of having recurrences of child maltreatment (Fuller & Wells, 2003; Wolock & Magura, 1996). A study by Wolock and Magura (1996) reported that parental substance abuse has a direct effect on recurrence of child maltreatment and an indirect effect through family functioning. Of 94 cases with subsequent allegations, 60% of substance-abusing caregivers had subsequent allegations compared to 25% of caregivers without any drug or alcohol problems (Wolock & Magura, 1996). Consequently, one important goal of child welfare is to improve parents' success in substance abuse treatment.

Treatment completion is also a significant predictor of family reunification in the child welfare system. Although the mechanism between treatment completion and family reunification has not been thoroughly explored yet, one particular study by Smith (2003) provided important evidence. Smith examined the impact of substance abuse treatment compliance among 159 substance-abusing caregivers involved in child welfare. The treatment compliance was measured by an episode of treatment completion. The author compared reunification rates among three groups: (a) children of parents with no substance abuse problem, (b) children of parents with a substance abuse problem but who completed treatment, and (c) children of parents with substance-abusing problems and who dropped out of the treatment. The findings indicate that treatment compliance significantly improved the likelihood of reunification for substance-abusing families.

In summary, the completion of substance abuse treatment is an important outcome in child welfare

research. Yet little is known about the factors that help explain this outcome. The current study addresses this gap and makes a unique contribution to the literature by identifying a wide range of factors that explain the completion of substance abuse treatment for caregivers involved with child welfare.

Conceptualization of Treatment Completion

The conceptualization of treatment completion varies across studies. *Treatment completion* is defined in terms of retention versus dropout (Laken, McComish, & Ager, 1997; Lang & Belenko, 2000; McCaul, Svikis, & Moore, 2001; Simpson, Joe, Rowan-Szal, & Greener, 1997; Vaughn, Sarrazin, Saleh, Huber, & Hall, 2002), program retention versus discharge against medical advice (AMA; Armenian, Chutuape, & Stitzer, 1999; Cook, Booth, Blow, McAleenan, & Bunn, 1994), and treatment compliance versus noncompliance (Smith, 2003; Sung, Belenko, & Feng, 2001). Moreover, the majority of the literature focuses on completion within a single treatment setting (Bride, 2001; Nellori & Ernst, 2004; Stack, Cortina, Samples, Zapata, & Arcand, 2000; Zarkin, Dunlap, Bray, & Wechsberg, 2002). For example, Stack et al. (2000) focused exclusively on residential treatment whereas Bride (2001) focused exclusively on a gender-specific outpatient program. Consequently, little is known about the factors that predict the completion of substance abuse treatment beyond a single program.

Prior conceptualizations are problematic in that the majority of substance-abusing caregivers is expected to progress through a continuum of care rather than participate in a single program. The current study builds on prior research and makes a unique contribution to the literature by conceptualizing the dependent measure as the successful completion of all required levels of care. This continuum of care includes detoxification, residential inpatient, intensive outpatient, outpatient, recovery home, and support group.

Predicting Treatment Completion

Although not specific to child welfare, there exists a relatively broad literature that focuses on client characteristics and treatment success (Beardsley, Wish, Fitzelle, O'Grady, & Arria, 2003; Kelly, Blacksin, & Mason, 2001; Wallave & Weeks, 2004). Characteristics considered to be important to treatment completion include age, education, employment, gender, race, the presence of co-occurring problems at intake, and drug use patterns such as types of primary drug and severity of drug dependence (Arfken, Klein, Menza, & Schuster, 2001; Armenian et al., 1999; Brewer, Catalano, Haggerty, Gainey, & Fleming, 1998; Haller, Knisely, Elswick, Dawson, & Schnoll, 1997; Lang

& Belenko, 2000; Nellori & Ernst, 2004; Stack et al., 2000). The focus of the current article is on understanding the effects of co-occurring problems and primary drugs of choice within the context of the child welfare system.

Co-Occurring Problems and Treatment Completion

Families experiencing multiple problems simultaneously often achieve poor outcomes in the child welfare system. Yet little is known about how co-occurring problems at intake may affect the likelihood of completing treatment within the context of child welfare. There are studies and findings outside child welfare that are also important to consider. Previous studies indicate that substance abusers with ongoing legal difficulties are less likely to complete treatment. A study by Knight, Logan, and Simpson (2001) examined predictors of treatment completion among 87 pregnant women or women with children in residential treatment and found that women with no arrest records in the 6 months before admission are more likely to complete treatment. The findings related to family violence are less consistent. The presence of family violence is believed to have an important role in the etiology of substance abuse, especially for women; however, the majority of studies find no relationship between the presence of family violence and treatment completion (Kelly et al., 2001).

Concurrent psychiatric symptoms or other disorders such as clinical depression, anxiety, and suicidal thoughts are prevalent among substance abusers (Kathleen et al., 2000; Miller, Hoffmann, Ninonuevo, & Astrachan, 1997). Studies indicate that these symptoms and mental disorders increase the likelihood of achieving negative treatment outcomes (McLellan, Luborsky, & Woody, 1983).

Drug Use Patterns and Treatment Completion

Research also documents an association between drug use patterns such as types of drug and severity of drug dependency, treatment success, and recovery (Copeland & Hall, 1992; Hughes, 1993). However, the vast majority of this work focuses on a single type of drug user (McHanon, Kouzerkanani, & Malow, 1999; Moore & Budney, 2002). The comparison of various types of substance users are documented in very few studies. Where such comparisons exist, the findings are generally inconsistent and inconclusive. For example, Copeland and Hall (1992) and Nellori and Ernst (2004) reported that heroin users are at an increased risk of dropping out. In contrast, Chan, Wingert, Wachsmann, Schuetz, and Rogers (1986) reported no differences when comparing various types

of substance abusers. As treatment programs often serve a wide variety of substance abusers, it is important to disentangle treatment effects for specific types of substance abusers. Regarding the severity of drug use, individuals that report a greater severity of drug dependency are more likely to drop out of treatment relative to individuals with less severe drug dependency problems (Hser et al., 1997; Melnick, De Leon, Thomas, & Kressel, 2001).

Prior studies of treatment completion have made valuable contributions in the field of substance abuse. Unfortunately, these studies have not focused on caregivers involved with public child welfare. Moreover, the vast majority of prior work is limited to one specific type of drug treatment program and one specific type of drug. Consequently, we know very little about the factors related to critical outcomes such as the completion of substance abuse treatment for caregivers associated with allegations of physical abuse and neglect. The current study addresses these gaps in the literature by attempting to investigate factors related to treatment completion among substance-abusing families in child welfare. This current study focuses on caregivers who are involved with the Illinois Alcohol and Other Drug Abuse (AODA) waiver demonstration. Recovery Coaches (a type of proactive case management) were offered for parents to provide continual and aggressive outreach efforts to facilitate access to services and reengage parents in treatment when necessary. Using Cox regression, we examine the association between the completion of substance abuse treatment and (a) demographic characteristics, (b) co-occurring problems, (c) physical and mental symptoms, (d) severity of drug dependency, and (e) specific type of drug use. The analyses are designed to address the following research questions.

What percentage of substance-abusing caregivers involved with child welfare aided by Recovery Coaches complete all levels of recommended treatment?

What risk factors help explain the likelihood of completing substance abuse treatment?

METHOD

The data used in the current study are a subset of data from the Title IV-E AODA waiver demonstration in the state of Illinois. This particular waiver focuses on substance-abusing parents in the child welfare system. A primary goal of the AODA waiver project is to provide children with permanent and stable living arrangements (e.g., family reunification, adoption, or subsidized guardianship) among substance-abusing families by the use of Recovery Coaches. The Recovery Coaches provide a proactive case management

strategy that emphasizes aggressive outreach efforts via working with parents, child welfare caseworkers, and AODA treatment agencies. The primary focus of the Recovery Coaches is to improve substance abuse treatment utilization and completion for caregivers involved with child welfare.

Participants are parents whose children were in foster care on or after April 28, 2000, in Chicago and suburban Cook County. Parents were referred to the Juvenile Court Assessment Project (JCAP) immediately following the temporary custody hearing or at any time within 90 days subsequent to the hearing. If parents were identified as substance abusers they were then randomly assigned to either a control or experimental group. The control group received traditional substance abuse services; that is, they received services that were available to child welfare clients prior to the waiver demonstration. The experimental group (or demonstration group) received traditional services plus the services of a Recovery Coach. Recovery Coaches assisted caregivers with obtaining needed treatment services and in negotiating departmental and judicial requirements associated with drug recovery and concurrent permanency planning. As of June 30, 2004, 1,309 caregivers were enrolled in the waiver project: 366 in the control group and 943 in the experimental group.

Sample

Data on treatment completion were only available for the caregivers assigned to the experimental group. Thus, the sample is limited to these caregivers. The sample is also limited to the caregivers enrolled in the waiver demonstration between April 28, 2000, and March 30, 2004 ($N = 871$). The average length of their involvement with the waiver project was 713 days (about 2 years), ranging from 67 days to 1,428 days (3.9 years). The treatment completion data run through June 30, 2004. Designating the cutoff date as April 1, 2004, allowed caregivers at least 3 months to complete substance abuse treatment. Of 871 caregivers, only 3% of caregivers ($n = 23$) were given a 3-month observational period.

On average, caregivers were age 35 years, and 70.5% were female (see Table 1). The average number of children within each family was four. The majority of caregivers were African Americans (81%) and lived with family or friends (73%). Approximately 10% of caregivers were married, and 77% were never married. More than 50% of caregivers had less than a high school education. Approximately 71% of caregivers were unemployed and 44.5% did not report a source of income.

Measures

The current study utilizes two sources of data. First, The JCAP assessment provides alcohol and drug assessments. The certified clinicians conducted a thorough computerized assessment to determine whether or not a client requires a treatment recommendation and referral. This assessment tool contains a wide range of demographic and family characteristics, health and mental health, drug dosage, and drug use patterns. In addition, we used 11 questions from the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; American Psychiatric Association, 1994) and the American Society of Addiction Medicine (ASAM) guidelines to measure the dependency on primary drug of choice. Example questions include whether or not a caretaker felt ill without the primary drug and whether or not caregivers needed to take larger amounts of the substance to get high or not. If a caretaker answered yes, he or she received a value of 1. Otherwise they received a value of 0. We then summed the total score for each caregiver and divided them into three groups: low dependency (0 to 3), moderate dependency (4 to 7), and high dependency (8 to 11). Approximately 40% of caregivers ($n = 350$) accounted for the group of low dependency on the primary drugs. About 30% of caregivers ($n = 260$) fell into the group of moderate dependency, and another 30% of caregivers ($n = 261$) fell into the group of high dependency.

Second, Treatment Alternative for Safe Communities (TASC) data provide information on caregivers' status of substance abuse treatment. Recovery Coaches complete TASC forms each quarter and report whether or not caregivers completed treatment. *Treatment completion* was defined as discharge from all levels of assigned treatment. Treatment services included detoxification, outpatient treatment, intensive outpatient treatment, residential and/or inpatient treatment, and recovery homes. The data source did not include the exact date of treatment completion but rather the quarter within which treatment was completed. We calculated time to treatment completion as the number of days between the JCAP and the last day of the specified quarter. The average quarters taken to treatment completion for the current sample was about 4 quarters (339 days) ranging from 90 days to 1,095 days (3 years). Of 190 caregivers who completed treatment, 20% ($n = 32$) of caregivers completed their treatment in fewer than 100 days.

Data Analysis

Cox regression is a technique that is widely used in various fields including biometry, medical research,

TABLE 1: Descriptive Statistics

Variable	Total Sample (N = 871)	Completers (n = 190)	Noncompleters (n = 681)
	M	M	M
Age	35.83	36.36	35.68
Number of children	4.28	4.16	4.32
	N (%)	n (% within each variable)	n (% within each variable)
Gender			
Female	614 (70.5)	132 (21.5)	482 (78.5)
Male	257 (29.5)	58 (22.6)	199 (77.4)
Race and/or ethnicity** ($\chi^2 = 3.274$, $df = 2$, $p < .05$)			
African American	706 (81.0)	150 (21.2)	556 (78.8)
White	107 (12.3)	30 (28.0)	77 (72.0)
Hispanic	58 (6.7)	10 (17.2)	48 (82.8)
Education* ($\chi^2 = 5.374$, $df = 2$, $p < .10$)			
< High school	448 (51.5)	86 (19.2)	362 (80.8)
High school or General Equivalency Diploma	290 (33.3)	76 (26.2)	214 (73.8)
> High school	55 (6.2)	14 (25.5)	41 (74.5)
Employment*** ($\chi^2 = 7.867$, $df = 1$, $p < .01$)			
Unemployment	621 (71.3)	120 (19.3)	501 (80.7)
Employment	250 (29.7)	70 (28.0)	180 (72.0)
Living arrangements			
Alone	147 (16.8)	35 (23.8)	112 (76.2)
Family and/or friends	636 (73.0)	134 (21.6)	502 (78.4)
Shelter and/or homeless	63 (7.2)	11 (17.4)	52 (82.6)
Source of income			
Wages or salary	134 (15.3)	36 (26.8)	98 (73.2)
Public assistance	286 (32.8)	63 (22.0)	223 (78.0)
Disability	42 (5.0)	9 (21.4)	33 (78.6)
Other	30 (3.0)	5 (16.6)	25 (83.4)
No source of income	388 (44.5)	79 (20.3)	309 (79.7)
Marital status			
Married	82 (9.5)	20 (24.4)	62 (75.6)
Never married	667 (76.5)	141 (21.1)	526 (78.9)
Other	122 (14.0)	29 (23.7)	93 (76.2)

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

engineering, and social science. One of the essential features of Cox regression is that the technique allows for the unbiased analysis of time to event data controlling for covariates. The event of interest in the current study is treatment completion. Like logistic regression, the exponential of the coefficients from the Cox model gives the relative risk of the odds for the covariate. Cox regression also proves superior to ordinary least squares regression (OLS) in that the Cox regression algorithm allows for censoring of persons who discontinued or did not experience the event (treatment completion in the current study) during the study period.

RESULTS

Sample Description

The co-occurring problems are displayed in Table 2. About 24% of caregivers indicated that they had a medical problem. Approximately 15% of caregivers ($n = 123$) had a current outstanding legal problem: One third of caregivers (35.8%) were on probation, and 29.3% of caregivers had charges pending. About 63% of caregivers had previous substance exposed infants (SEI) history.

Drug use patterns and substance abuse treatment histories are displayed in Table 3. About 63% of caregivers

TABLE 2: Descriptive Statistics: Problems at Intake

<i>Overall</i>	<i>Total Sample (N = 871)</i>	<i>Completers (n = 190)</i>	<i>Noncompleters (n = 681)</i>
<i>Variable</i>	<i>N (%)</i>	<i>n (% within each variable)</i>	<i>n (% within each variable)</i>
Medical problems** ($\chi^2 = 3.064$, $df = 1$, $p < .05$)			
Yes	274 (23.6)	50 (18.2)	224 (81.8)
No	573 (67.7)	135 (23.6)	438 (76.4)
Prescribed medications			
Yes	259 (30.7)	54 (20.8)	205 (79.2)
No	585 (69.3)	131 (22.4)	454 (77.6)
Mental health problems			
Yes	72 (17.2)	12 (16.7)	60 (83.3)
No	347 (82.8)	57 (16.4)	290 (83.6)
Previous substance exposed infants (SEI)**** ($\chi^2 = 13.807$, $df = 1$, $p < .001$)			
Yes	550 (63.7)	98 (17.8)	452 (82.8)
No	314 (36.3)	90 (28.7)	224 (71.3)
Current outstanding legal issues** ($\chi^2 = 4.635$, $df = 1$, $p < .05$)			
Yes	123 (14.4)	36 (29.3)	87 (70.7)
No	733 (85.6)	151 (20.6)	582 (79.4)

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

TABLE 3: Descriptive Statistics: Drug Use Patterns and Previous Treatment History

	<i>Total Sample (N = 871)</i>	<i>Completers (n = 190)</i>	<i>Noncompleters (n = 681)</i>
<i>Variable</i>	<i>N (%)</i>	<i>n (% within each variable)</i>	<i>n (% within each variable)</i>
Primary substance used**** ($\chi^2 = 23.905$, $df = 3$, $p < .001$)			
Alcohol	181 (20.8)	48 (26.5)	133 (73.5)
Cocaine	324 (37.2)	66 (20.4)	258 (79.6)
Marijuana	133 (15.3)	45 (33.8)	88 (66.2)
Heroin	233 (26.8)	31 (13.3)	202 (86.7)
Dependency on primary drug** ($\chi^2 = 8.155$, $df = 2$, $p < .05$)			
Low	350 (40.1)	86 (24.2)	264 (75.8)
Moderate	260 (29.9)	63 (24.2)	197 (75.8)
High	261 (30)	41 (15.7)	220 (84.3)
Previous treatment for substance abuse			
Yes	542 (63)	111 (20.5)	431 (79.5)
No	318 (37)	77 (24.2)	241 (75.8)
Previous treatment for mental and/or emotional health			
Yes	145 (17)	35 (24.1)	110 (75.9)
No	710 (83)	153 (21.5)	557 (78.5)

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

TABLE 4: Descriptive Statistics: Violence History

Variable	Total Sample (N = 871)	Completers (n = 190)	Noncompleters (n = 681)
	N (%)	n (% within each variable)	n (% within each variable)
Victims of violence			
Yes	254 (29.2)	59 (23.2)	195 (76.8)
No	614 (70.8)	131 (21.2)	486 (78.8)
Victims of violence in the past 30 days			
Yes	47 (5.4)	13 (27.7)	34 (72.3)
No	824 (94.6)	177 (21.4)	656 (78.6)
Victims of physical abuse*			
($\chi^2 = 2.501, df = 1, p < .10$)			
Yes	135 (15.5)	23 (17.0)	112 (83.0)
No	736 (84.5)	167 (22.7)	579 (77.3)
Victims of sexual abuse			
Yes	96 (11.0)	19 (19.8)	77 (80.2)
No	775 (89.0)	171 (22.1)	604 (77.9)

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

TABLE 5: Descriptive Statistics: Physical and Mental Symptoms

Variable	Total Sample (N = 871)	Completers (n = 190)	Noncompleters (n = 681)
	N (%)	n (% within each variable)	n (% within each variable)
Been so nervous in past 30 days			
Yes	63 (7.2)	12 (19.0)	51 (81.0)
No	808 (92.8)	178 (22.0)	630 (78.0)
Depressed as long as 2 weeks in past 30 days*			
($\chi^2 = 2.119, df = 1, p < .10$)			
Yes	117 (13.4)	32 (26.9)	85 (72.6)
No	754 (86.6)	158 (21.0)	596 (79.0)
Difficulty remembering or concentrating in past 30 days			
Yes	62 (7.1)	10 (16.1)	54 (83.9)
No	809 (92.9)	180 (22.2)	629 (77.8)

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

reported having previous exposure to substance abuse treatment, and 17% of all caregivers had a treatment history because of emotional or mental disorders. The primary substance of choice was marijuana (37%), heroin (27%), alcohol (21%), and cocaine (15%).

A substantial number of caregivers reported experiencing some form of violence (30%) including physical abuse (15%) and sexual abuse (11%) in their past (see Table 4). As Table 5 shows, some caregivers experienced recent physical and mental difficulties. Three questions were used to assess the presence of recent physical and mental symptoms.

They included whether or not she or he experienced any memory loss, nervousness, or depression in the past 30 days. About 13.4% of caregivers reported having depressed symptoms for as long as 2 weeks in the past 30 days.

Bivariate Analysis

Bivariate analyses were conducted to determine the relationship between various independent variables and treatment completion rates using chi-square and *t* tests. Tables 1, 2, 3, and 4 describe the results of bivariate analysis. Of 871 caregivers, 190

TABLE 6: Cox Regression Models for Treatment Completion

Variables	Model 1			Model 2			Model 3		
	Coefficient	SE	Exp(b)	Coefficient	SE	Exp(b)	Coefficient	SE	Exp(b)
Age	.016	.011	1.016	.015	.011	1.015	.028***	.011	1.028
Income	.069	.044	1.072	.059	.044	1.061	.054	.044	1.055
African American	-.217	.224	.805	-.191	.222	.826	-.213	.228	0.809
Hispanic	-.626*	.375	.535	-.551	.376	.577	-.459	.379	0.632
Unemployed	-.380**	.195	.684	-.403**	.196	.668	-.355*	.197	0.701
< high school	-.119	.164	.888	-.135	.164	.873	-.152	.165	0.859
Female	.173	.201	1.189	.218	.202	1.244	.311	.205	1.364
Married	.170	.240	1.185	.187	.240	1.205	.180	.241	1.197
Current legal problem	.368**	.208	1.445	.450***	.210	1.569	.521**	.215	1.684
Substance exposed infants	-.471***	.163	.624	-.392***	.166	.676	-.218	.181	0.804
Depressed	.710***	.245	2.035	.752***	.245	2.122	.763***	.251	2.145
Nervous	-.334	.331	.716	-.334	.332	.716	-.414	.335	0.661
Memory loss	-1.053***	.387	.349	-.989***	.385	.372	-1.041***	.389	0.353
Severity—High				-.432**	.193	.649	-.199	.204	0.819
Alcohol							.537**	.265	1.711
Cocaine							.459**	.235	1.582
Marijuana							1.121***	.290	3.067
-2 log likelihood			2033.137			2027.809			2012.501
χ^2, df			48.721, 13****			54.194, 14****			71.256, 17****
Model contribution			11.184, 3***			5.328, 1**			15.308, 3***

* $p < .10$. ** $p < .05$. *** $p < .01$. **** $p < .001$.

(21.8%) caregivers completed treatment by June 30, 2004.

Demographic characteristics. Race, education, and employment were associated with treatment completion (see Table 1). White caregivers (28%) were more likely to complete treatment, compared with African Americans (21.2%) and Hispanics (17.2%). High school graduates (26.2%) were more likely to complete treatment compared to caregivers with less than a high school education (19.2%). Employed caregivers (28%) were more likely to complete treatment relative to unemployed caregivers (19.3%).

Caregivers' co-occurring problems. Three problem areas, including medical problems, previous SEI history and current outstanding legal issues, had significant impacts on treatment completion rates (see Table 2). Medical problems at intake significantly decreased the treatment completion rates (18.2 % vs. 23.6 %). Caregivers with previous SEI history were less likely to complete treatment (17.8% vs. 28.7 %) whereas caregivers with current legal issues were more likely to complete treatment (29.3% vs. 20.6%).

Drug use patterns. The types of primary drug used and the levels of dependency on primary drug were significantly associated with treatment completion (see Table 3). Alcohol users (26.5%), marijuana users

(33.8%), and cocaine users (20.4%) were more likely to complete treatment compared with heroin users (13.3%). Previous substance abuse treatment (20.5% vs. 24.2%) and mental and/or emotional health treatment history (24.1% vs. 21.5%) were not significantly related to the treatment completion. Caregivers with high dependency on primary drug had a lower rate of treatment completion (15.7% vs. both, 24.2%).

Violence history. As Table 4 shows, the past victims of physical abuse were negatively associated with treatment completion (17.0% vs. 22.7%), yet the victims of past sexual abuse were not associated with treatment completion (19.8% vs. 22.1%). In addition, the current violence history was not significantly associated with treatment completion (27.2% vs. 21.4%).

Physical and mental symptoms. Among three physical and mental symptoms, the depressive symptom was significantly associated with treatment completion. Caregivers experiencing current depressive symptoms had a higher rate of treatment completion (26.9% vs. 21%) than caregivers without current depressive symptoms.

Cox Regression

Table 6 shows the results of three models constructed to assess relative effects on the hazard rate for

treatment completion. Model 1 contains demographic characteristics, the co-occurring problems, and physical symptoms. The second model then includes the level of dependency on primary drug. Adding the level of dependency also improves the overall model ($\chi^2 = 54.194$, $df = 14$, $p < .0001$). The racial effect became nonsignificant whereas the other effects remained same.

The final model includes the primary drug of choice. The final Cox regression model indicates that age, employment, outstanding legal issues, physical symptoms including current depression episodes and difficulties memorizing or concentrating, and primary drug of choice have significant effects on treatment completion. The overall fit of the final model is acceptable ($\chi^2 = 71.256$, $df = 17$, $p < .0001$). The $\text{Exp}(b)$ represents the proportional hazard ratio of probability of treatment completion. A hazard ratio greater than 1 indicates a higher likelihood of treatment completion whereas a hazard ratio less than 1 indicates a lower likelihood of treatment completion. The hazard ratio of completing treatment for alcohol users was 1.711 indicating that compared with heroin users the likelihood of treatment completion for alcohol users was 71% greater. Compared to heroin users, cocaine users were 58% more likely than heroin users to complete treatment, $\text{Exp}(b) = 1.581$. Marijuana users were about 3 times greater than heroin users, $\text{Exp}(b) = 3.067$. Age becomes significant in the final model: The increasing age was positively related to the treatment completion rates. The hazard ratio of 1.028 indicates that for each year of age increase, the likelihood of treatment completion increases by approximately 3%. Controlling for the other covariates in the model, the likelihood of treatment completion among caregivers with current outstanding legal issues was, on average, 69% greater than caregivers without the current outstanding legal issues, $\text{Exp}(b) = 1.684$. The likelihood of treatment completion for unemployed caregivers was 30% less than for employed caregivers, $\text{Exp}(b) = .701$. Caregivers with depression symptoms were 2 times more likely to complete their treatment, $\text{Exp}(b) = 2.145$, whereas caregivers experiencing recent difficulties of memorizing or concentrating were 64% less likely to complete their treatment, $\text{Exp}(b) = .353$.

DISCUSSION

The purpose of the current study was to identify factors associated with treatment completion for substance-abusing caregivers involved with public child welfare. The bivariate and multivariate models indicate that a wide range of factors including age, employment status, the presence of physical and mental symptoms,

legal problems, and types of primary drugs significantly influence the rate of treatment completion.

The final model indicates that treatment completers are more likely to be older and employed. These findings are consistent with other studies that have found that older substance users are more likely to complete treatment (Green, Polen, Dickinson, Lynch, & Bennett, 2002; Nellori & Ernst, 2004), and those with employment are more likely to complete their treatment (Brewer et al., 1998; Green et al., 2002). Such findings suggest that providing employment services might improve substance abuse treatment completion. There is evidence to support such a hypothesis. Joe, Simpson, and Sells (1994) and Pollack, Danziger, Seefeldt, and Jayakody (2002) reported that matching clients' employment with specific services significantly improves treatment outcomes. Considering that 71% of the caregivers in the current study were unemployed, services targeting employment seem particularly relevant for substance-abusing parents in the child welfare system.

Somewhat unexpectedly, the results indicate that physical and mental health symptoms had mixed impact on substance abuse treatment. For example, the symptoms of current memory loss and nervousness were negatively associated with the likelihood of treatment completion. In contrast, caregivers reporting current depressive symptoms were approximately 2 times more likely to complete substance abuse treatment. We are not sure what to make of this negative association between current depressive symptoms and treatment completion. It is possible that our measure of depression is limited and not sensitive enough to detect subtle difference with regard to levels of depression.

The findings also indicate that parents involved with the adult correctional system are more likely to complete substance abuse treatment. This particular finding is inconsistent with the majority of previous reports in the fields of substance abuse, which indicate that individuals with legal problems are less likely to complete substance abuse treatment (Brewer et al., 1998; Hser et al., 1997). However, it is possible that pressure from the adult correctional system contributes to higher completion rates for parents also involved with child welfare. Some empirical evidence that supports this hypothesis exists, and several intervention strategies using coercive pressure have been developed (Marlowe et al., 2001; Marlowe & Kirby, 1999). One such attempt in child welfare is family drug courts, which are specialized courts that incorporate intensive judicial supervision, sanctions, and incentives to promote substance abuse treatment utilization and increase parents' accountability.

Although preliminary findings on family drug courts report increased treatment retention rates (Center on Addiction and Substance Abuse [CASA], 1999; Wolf, 2000) and improved child welfare outcomes (Belenko, 2001; CASA, 1999; Wolf, 2000), we know little about the specific aspects or components responsible for such success.

The findings from the current study also highlight the importance of the primary drug of choice. Compared to alcohol, cocaine, and marijuana users, caregivers that identified heroin as their primary drug of choice were significantly less likely to complete substance abuse treatment. Specifically, alcohol users were 71% more likely to complete treatment than heroin users, cocaine users were 59% more likely to complete treatment than heroin users, and marijuana users were about 300% more likely to complete treatment than heroin users. This finding is consistent with prior studies of drug use patterns and treatment outcomes (Copeland & Hall, 1992; Hughes, 1993; Kelly et al., 2001). The study by Armenian et al. (1999) indicates that heroin users had higher rates of resistance against medical advice than other drug users. Nellori and Ernst (2004) also found that treatment completion rates were better for cocaine and alcohol users but poorer for heroin users among 207 adults in detoxification units. These findings indicate that treatment plans must be tailored according to drug type.

One question that remains is whether current child welfare practices recognize such subgroup differences in treatment. Lundgren, Schilling, and Peloquin (2005) attempted to answer this question by reviewing the current treatment recommendations for substance-abusing parents, especially for heroin users. Findings from that study indicate that although there is available knowledge of what works best for different types of substance abusers, no article in child welfare specifically addressed the need for matching types of drug and types of treatment for substance-abusing parents. In addition, only a few states had specific guidelines for working with parents with different types of substances. For example, there exists extensive evidence in the substance abuse field that methadone treatment is an effective approach for heroin users, yet methadone treatment has been underutilized as a treatment option in child welfare (Lundgren et al., 2005). The current study reports similar findings. Of the 233 heroin users in the current sample, only 24.3% were referred for methadone treatment. Clearly there is a need for child welfare systems to adopt evidence-based practices for substance-abusing clients.

One of the most interesting findings is related to the overall rate of treatment completion. Many of the caregivers in the current study were enrolled in the AODA demonstration waiver for more than 2 years. Yet the descriptive statistics revealed that only 22% successfully completed substance abuse treatment—and this is for a group of parents that received traditional services plus the services of a Recovery Coach (i.e., aggressive case management). For one reason or another, more than 75% of the caregivers were simply unable to complete treatment.

The low rate of treatment completion is of concern for at least two reasons. First, if the majority of families entering the child welfare system struggle with substance abuse issues, and if the reunification rates associated with this population are considered low (i.e., 22%), child welfare systems must develop specific permanency alternatives for this particular subgroup. This is especially true considering that even when parents complete substance abuse treatment, reunification is not always a certainty (Marsh, Ryan, Choi, & Testa, 2006). Second, prior studies support the effectiveness of aggressive case management with regards to reunification (Delaware Division of Family Services, 2002; Maluccio & Ainsworth, 2003). Although aggressive case management techniques may produce significantly higher rates of reunification, one might question what percentage constitutes effectiveness.

Two major challenges in working with substance-abusing parents could potentially explain the low treatment completion rate in the current study: the lack of accessible treatment facilities and lack of service matching to co-occurring problems. First, prior studies focused on the lack of accessible substance abuse treatment services nationwide (Young, Gardner, & Dennis, 1998). It is not surprising to note that studies reported difficulties in promptly providing treatment services to substance-abusing parents (USGAO, 2003). This is particularly true for women with children. For example, if a parent has custody of the children and requires residential treatment, there may be an additional barrier to treatment access because many of these programs do not allow children to live in the facility (USGAO, 2003). Of 871 caregivers, 39 (5%) caregivers indicated that they have other children living with them, and those living with children had a lower rate of treatment completion than those living without children (22.2% vs. 12.8%) ($\chi^2 = 1.936$, $df = 1$, $p > .05$). Despite statistical nonsignificance, this finding suggests the necessity of future development of substance abuse treatment services that are sensitive to the needs of caregivers living with children.

Prior studies also highlight the issues related to co-occurring problems and the importance of the provision of comprehensive services. Marsh, D'Aunno, and Smith (2000) noted that many substance-abusing families simultaneously struggle with parental problems, domestic violence, mental health, poverty, and issues related to child maltreatment. Accordingly, an accumulating body of evidence in the field of substance abuse suggests that matching such co-occurring problems with services are associated with positive outcomes in (a) reduced substance use, (b) treatment retention, (c) improved clients' functioning in employment or family and/or social relations, and (d) clients' satisfaction (Hser, Polinsky, Maglione, & Anglin, 1999; Marsh et al., 2000; McLellan et al., 1997; Smith & Marsh, 2002). Despite the benefits of providing comprehensive services to substance-abusing families, studies also reported the low rates of service matching to clients' needs (Hser, Polinsky, et al., 1999; Smith & Marsh, 2002). For example, Smith and Marsh (2002) reported that the rate of unmet service needs of 183 women involved in public child welfare was 56% for child care, 90% for housing, and 92% for legal service. Hser, Polinsky, et al. (1999) also found low rates of service matching among clients in public substance abuse treatment programs. Except for transportation services, clients' needs in medical, psychological, family and/or social, employment, and housing were poorly matched with services received (Hser, Polinsky, et al., 1999).

Caregivers in the current study also report a variety of co-occurring problems at intake. One third of caregivers had experienced violence, and about 45% of caregivers reported that they do not have any source of income. About 18% of caregivers had mental health problems, and 24% of caregivers had medical problems. It is possible that untreated co-occurring problems may substantially jeopardize caregivers' ability to engage in and complete substance abuse treatment in the current study. Yet we do not focus on how reported, co-occurring problems were addressed. Future studies should explore the impact of services for co-occurring problems on substance abuse treatment completion and the mechanism between matching clients' needs with services and treatment completion among substance-abusing families.

The current study makes a unique contribution to the child welfare and substance abuse literature. Yet there are some limitations worth noting. First, the current study was limited to families in the demonstration group. Thus, we are unable to identify whether Recovery Coaches are associated with different levels of treatment completion. Second, our

measure of treatment completion included the full continuum of substance abuse services and related specifically to the recommended course of treatment. As the needs varied among individual caregivers, so did this particular measure of treatment completion. For example, "caregiver A" might require inpatient and outpatient treatment. In contrast, "caregiver B" might only require outpatient services. It seems important that future studies investigate the types of services recommended and completed. Finally, all measures except treatment completion are derived from self-report assessments. The evidence is mixed with regard to the validity of self-report data. Although some studies support self-reports (Hser, Maglione, & Boyle, 1999), other studies report that the validity of this approach relies on the anonymity (Bradburn et al., 1979; McElrath, 1994). The assessments used in the current study were conducted shortly after the temporary custody hearing inside the county court building. It is possible that the involuntary nature of participation or a fear for legal sanctions may interfere with the validity of clients' answers regarding substance use.

In closing, the current study investigated a wide variety of factors that explain the completion of substance abuse treatment for caregivers in the child welfare system. To date, very few studies have focused on this particular topic. The findings indicate a variety of factors that might be incorporated into pretreatment assessments—so that child welfare caseworkers can initiate preventive measures to decrease attrition and improve treatment completion. Hopefully, this in turn will improve outcomes in the child welfare system. From a broader perspective, the current study also raises questions about the level of success achieved by substance-abusing families in the child welfare system. Should child welfare systems be satisfied with increased rates of reunification—even if such increased rates remain below 25%? It seems important for researchers, practitioners, and policy makers to (a) continue identifying the conditions and factors associated with positive outcomes and (b) engage in discussions focused on defining what constitutes success in child welfare.

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