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Criminal Justice Involvement, Behavioral Health Service Use, and Costs of Forensic Assertive Community Treatment: A Randomized Trial

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Abstract

Jail diversion and forensic community treatment programs have proliferated over the past decade, far outpacing evidence regarding their efficacy. The current study reports findings from a randomized clinical trial conducted in California for frequent jail users with serious mental illness that compares a forensic assertive community treatment (FACT) intervention with treatment as usual (TAU). Outcomes are reported at 12 and 24 months post-randomization for criminal justice outcomes, behavioral health services and costs. At 12 months, FACT vs. TAU participants had fewer jail bookings, greater outpatient contacts, and fewer hospital days than did TAU participants. Results of zero-inflated negative binomial regression found that FACT participants had a higher probability of avoiding jail, although once jailed, the number of jail days did not differ between groups. Increased outpatient costs resulting from FACT outpatient services were partially offset by decreased inpatient and jail costs. The findings for the 24 month period followed the same pattern. These findings provide additional support for the idea that providing appropriate behavioral health services can reduce criminal justice involvement.

Keywords

Jail diversion; Mental illness; Forensic assertive community treatment

Introduction

Recent estimates suggest that over one million people with serious mental illness (SMI) are booked into U.S. jails each year resulting in an overall prevalence rate of 15% for men and

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31% for women (Steadman et al. 2009). In fact, the odds of a person with SMI being jailed are *significantly greater* than the odds of being hospitalized (Morrissey et al. 2007). Individuals displaying symptoms characteristic of mental illness were found to have a 67% higher probability of being arrested than individuals not displaying such symptoms (Teplin 1984, 2000). Moreover, after this initial arrest, individuals with SMI are more likely to be detained in jail (as opposed to released on own recognizance or have cases dismissed), and once jailed, stay incarcerated 2.5–8 times longer in comparison to their non-mentally ill counterparts (Council of State Governments 2005).

Forensic adaptations of evidence-based programs such as Assertive Community Treatment (ACT) have been advocated as a way to divert persons with mental illness from jail. Both ACT and Forensic ACT (FACT) provide comprehensive, team-based services, have a psychiatrist on the team, have low staff to client ratios, and provide services around the clock. Several features make FACT unique, including its targeting of individuals with prior arrests, accepting referrals from criminal justice agencies, recruiting criminal justice agency partners, use of court sanctions to encourage participation, engaging probation officers as members of the treatment team, and making rearrest prevention an explicit goal (Lamberti et al. 2004). While these forensic adaptations have rapidly caught on as a way to address the needs of mentally-ill offenders, there is yet no standardized clinical model of FACT in terms of program elements, client eligibility, or staffing (Cuddeback et al. 2007, 2009). Moreover, many local correctional managers are concerned about the high per-participant cost of FACT and opt instead for less costly forensic intensive case management (FICM) services.

The current evidence for the effectiveness of FACT is modest but suggestive. In two separate pre-post only studies, significant reductions in arrests, jail days, hospitalizations, and hospital days were found (Lamberti et al. 2001; McCoy et al. 2004). However, in a randomized study, Solomon and Draine found no clinical, social, or criminal justice outcome differences between a FACT-like intervention (ACT with a probation officer), intensive case management, and usual care (Solomon and Draine 1995). The differences in study designs and intervention conditions in these studies preclude drawing strong conclusions regarding the effectiveness of FACT.

In an effort to reduce recidivism among mentally ill offenders, California passed the Mentally Ill Offender Crime Reduction Grant (MIOCRG) through Senate Bill 1485 in 1998. Thirty programs in 26 counties were developed under the auspices of the local sheriffs' departments with the common goal of reducing the criminal justice involvement of people with SMI. The California Board of Corrections conducted an aggregate evaluation of 20 of these programs that employed randomized designs and found small but significant differences favoring the intervention groups on jail bookings, convictions, and jail days, as well as some quality of life measures (California Board of Corrections 2004). The report further noted that programs with higher fidelity to the ACT model achieved better outcomes. However, no statistical controls were used to adjust for the potential confounding influences associated with the many differences in target groups (e.g., demographics, clinical profiles, offense history) and types of programs (e.g., free-standing ACT vs. ACT with a mental health court or a residential treatment and housing program) implemented so it is unclear whether it was ACT fidelity or some other combination of factors that led to these outcome differences.

The current paper presents findings from one of the California MIOCRG counties that implemented a forensic adaptation of an ACT team. In contrast to the diversity of participants and programs in the aggregate state-wide report, the FACT program evaluated here had well-documented program features including high fidelity to the ACT model and many of the forensic adaptations mentioned above, including having law enforcement and

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probation officers on the team. This study addressed three main hypotheses about offenders with SMI who were diverted from the local jail: those randomized to FACT versus treatment as usual would have (1) lower recidivism, (2) fewer hospitalizations, and (3) both lower behavioral health and lower criminal justice costs.

Methods

Intervention

The FACT program studied here was carried out from 2000 to 2003 in the central city (pop. 189,000) of a large agricultural county in California. The FACT program was staffed and operated by the county behavioral health department through MIOCRG funding administered by the county sheriff's office. The program had high fidelity to the ACT model with Dartmouth Assertive Community Treatment Scale (Teague et al. 1998) scores of 4.5 and 4.6 (range 1–5) during its first and second years of operation. Participants in the FACT program received team-based mental health and substance abuse services, as well as support for housing, employment assistance, benefits applications, and advocacy. The FACT program also had a full-time peer recovery specialist. Each member of the team had primary responsibility for providing and/or coordinating services appropriate for designated consumer participants. Psychiatric and medication services were available to the participants through a part-time psychiatrist and registered nurse.

The full-time probation officer worked with the courts and the participants to establish conditions of probation (e.g., mandated participation in FACT, restitution (if applicable), agreement to avoid substance abuse) that encouraged participation in behavioral health services. She also tracked pre-existing and subsequent arrests, incarcerations, and jail days. If participants were incarcerated during the period of the study, jail staff ensured that the participants' medications were maintained and that a FACT staff member was notified of any changes.

Participants randomly assigned to the treatment as usual (TAU) condition were not provided any additional services beyond those routinely available in the county-operated public behavioral health system. The range of usual services included psychiatric assessment, psychiatric medications in both outpatient and inpatient general hospital settings, outpatient mental health and substance abuse counseling, and case management.

Participants

At the time of FACT enrollment participants were detained in the county jail and were diagnosed by FACT clinicians with a major mental disorder on Axis I of the DSM-IV. Potential participants were excluded if they were ever charged with a serious, violent offense (e.g., murder, forcible rape, aggravated assault) as defined in Penal Code section 667 (n = 33), and/or if they were a "third strike" candidate (n = 46). Participants were not excluded if they had a secondary substance abuse diagnosis or an additional Axis II or Aix III diagnosis.

Enrollment Procedures

Jail inmates were first identified by correctional mental health staff through initial screening. Inmates screening positive for history of mental illness, current suicidal ideation, or current/past use of psychotropic medications by corrections staff were then referred to a member of the research team for a full mental health assessment. Assessments were conducted by the FACT team within three working days from the date of referral. During the assessment, individuals were informed of the purpose of the study and consent was obtained. After final determination of eligibility by the team, participants were randomly assigned into the

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experimental treatment (FACT) or treatment as usual (TAU). Using a table of random numbers, 134 individuals were assigned in blocks of two, to either the FACT group ($N = 72$) or the TAU comparison group ($N = 62$). Assignment by random numbers achieves equivalency between-groups (see below) but not necessarily equal group size.

Outcome Measures

The current study did not rely on the data reported to the California Board of Corrections (CBOC) as part of the MIOCRG evaluation. The statewide evaluation conducted by the CBOC used a randomization design but it failed to follow the logic of an experiment where follow-up observations on subjects are recorded at common intervals following enrollment (exposure time). Rather, MIOCRG sites were required by the CBOC to report outcome data on all enrollees every 6 months (calendar time) regardless of when participants were enrolled. As a result, although person-level data on symptoms and quality of life were collected on all participants, these measures were tied to calendar time and we were not able to convert them to an exposure time format.

Consequently, we relied upon administrative data (see below) obtained from the county jail and behavioral health authorities to carry-out this study. Administrative data had several advantages. First, they were available for all participants independent of the schema employed in data collection for the MIOCRG evaluation. Second, it was possible to array them in a prospective cohort fashion for intervention and control subjects. And third, they allowed us to implement an intent-to-treat design whereby outcomes were observed regardless of active or continued participation in services during the 2-year follow-up period. Furthermore, it seemed reasonable to assume that any inaccuracies in the administrative data would be equally distributed in the intervention and control groups, thus unlikely to bias our results.

Finally, it should be noted that funding for the statewide MIOCRG program was reduced midway through the fourth year of its planned, 5-year lifespan due to budgetary cut-backs by the California state legislature (CABOC 2004). These budget reductions led to the premature ending of the evaluation. Except as noted below, this did not prevent us from accessing the relevant administrative data for the 2-year follow-up period.

Criminal Justice Involvement

Information on bookings, convictions, and jail days was obtained through administrative data collected by the county jail. Data were obtained for 1 year prior to study enrollment and up to 2 years after enrollment. Information on the cost per day in jail ($100) was obtained from the county sheriff's office which operated the jail.

Due to premature termination of the MIOCRG funding, hand collection of criminal justice data ceased in study months 13–24, resulting in missing bookings, jail days, and convictions for the last 20 participants (10 FACT and 10 TAU) enrolled in the study. We compared the subset of participants with missing second year data with those who had complete data to see if there were any differences on baseline variables. There were no significant differences at baseline between these two conditions on treatment group assignment, demographic, clinical, or criminal justice variables. Therefore, our criminal justice analyses were based on 62 TAU and 72 FACT participants in the first 12 months, but on a reduced sample of 52 TAU and 62 FACT participants for the second 12 months.

Behavioral Health Services

Administrative data on behavioral health service use on all enrollees 1 year prior to enrollment and 2 years after enrollment were obtained from the California Department of

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Mental Health (CDMH). These data were routinely reported to CDMH by the county behavioral health authority as part of the state-wide service reporting system. The data elements obtained included hospital admissions, number of days hospitalized, psychiatric crisis contacts, and outpatient services for both mental health and substance abuse. Unit costs (per day or visit, etc.) for each service type are based on the California Medicaid rates (MediCal) and were also obtained from the CDMH. Unit costs were summed separately for inpatient and outpatient services to the person-month level and then aggregated into first and second year totals. No other cost indicators were used for these analyses.

Statistical Analyses

Descriptive statistics are presented on the sample of participants (Table 1). Chi-square and *t*-test statistics were computed to determine differences between groups on these characteristics. Data on criminal justice involvement (number of bookings, jail days), mental health services (hospital days, outpatient mental health visits), and costs (jail, mental health) were analyzed cumulatively for months 1–12 and months 13–24 post-randomization.

Each of these variables represents a count of events, the distributions of which are often characterized by over-dispersion and excess zeros. Depending upon their distributions, these variables were analyzed using count models including negative binomial (outpatient visits, crisis contacts, booking, convictions, and outpatient costs) and zero-inflated negative binomial regression (inpatient days, jail days, inpatient costs, and jails costs). We first tested the fit of various count models including poisson, negative binomial, and zero-inflated versions of both. Zero-inflated models are appropriate in situations where the dependent variable has an excess of zeros (non-events). Conceptually, zero-inflated models estimate two parts. The first part of the model predicts the probability of the behavior occurring. The second part predicts the intensity or amount of the behavior conditional on its occurrence (Cox et al. 2009). Results for the count portion of the model are presented in the form of incident rate ratios (IRRs). IRRs correspond to the rate (count) of the event among the FACT condition ($\exp(\beta_0 + \beta_1 * x1)$) divided by the rate (count) among the TAU condition ($\exp(\beta_0)$). Odds ratios (OR) are reported for the zero-inflated portion of the model and correspond to the odds of having no instances of the event (jail or hospital days) in the follow-up period for the FACT compared to TAU condition. The IRRs and ORs are obtained by exponentiating the coefficients from either the count portion or logistic portion of the model, respectively. IRRs less than 1.0 indicate that FACT participants had a reduced rate compared to TAU whereas IRRs greater than 1.0 indicate that FACT participants had an increased rate compared to TAU participants. All analyses were conducted in SAS 9.1.3.

The county behavioral health agency approved the informed consent and study protocol. These procedures were also approved by the Institutional Review Board at the CDMH and the University of North Carolina at Chapel Hill.

Results

Participants

Consistent with the demographics of the county, the sample was mostly Caucasian (63%) males (59%) with an average age of 37 years (SD = 10). Most participants (65%) had a psychotic disorder including schizophrenia-spectrum or other psychotic disorders and the majority of the sample also had co-occurring substance abuse (66%). In the 12 months prior to enrollment in treatment, the mean number of jail days was 71 (SD = 75.8; median = 55).

Participants randomized to FACT and TAU groups were compared on demographic, clinical, and criminal justice variables at baseline (see Table 1). Overall there were no statistical differences between groups at baseline with regard to gender, race, clinical

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diagnosis, or criminal involvement and mental health service use in the prior 12 months. However, on average, participants in the FACT group were nearly 4.5 years older than participants in the TAU condition. Thus, age was included as a covariate in our initial statistical analyses. After adjusting for age we found that the results were essentially the same as those excluding this variable, so we have chosen to present the more straightforward unadjusted results. Taken together, the lack of differences on these observables suggests that the randomization procedure did work to produce two essentially equivalent groups on both measured and unmeasured variables.

Behavioral Health Services

Descriptive data and results of the count models are presented in Table 2. As shown by the incident rate ratio in the table, participants in the FACT group had more than twice the rate of outpatient visits than TAU participants in the first 12 months. In addition, although the zero-inflated portion of the model did not reveal a difference in whether participants were hospitalized, among those admitted, FACT participants had significantly fewer days of psychiatric hospitalization in the first year. The same pattern of greater outpatient visits and fewer hospital days was evident in the second year. There was no difference in the rate of crisis services used in the first or second year.

Criminal Justice Outcomes

Descriptive data and results of count models for criminal justice outcomes are reported in Table 3. Results of negative binomial regression indicate that the FACT group had significantly fewer bookings than TAU in the first 12 months. This same pattern was found for the reduced sample the second year. Results of zero-inflated negative binomial regression indicated FACT participants were more likely to avoid jail during the first year. There was no difference in the counts of jail days between groups in the first 12 months, indicating that once in jail, there was no difference in length of stay. The same trend with FACT participants less likely to be jailed continued in the second year for the reduced sample, although this relationship was no longer significant at the 0.05 level. The overall rate of convictions was low, and there was no difference in the rate of convictions between groups in either the first 12 months or for the reduced sample at months 13–24.

Jail and Behavioral Health Costs

Descriptive data and results of count models are reported in Table 4. The zero-inflated negative binomial models revealed lower per person inpatient costs for the FACT group ($5,426) compared to TAU ($8,852) in the first 12 months. Although not significant for months 13–24, this trend for lower per person inpatient costs continued for the FACT group ($4,266) compared to TAU ($7,156). As expected, participants in the FACT group had increased outpatient costs (average = $13,474 vs. $5,115) in the first 12 months and in months 13–24 (average = $8,570 vs. $4,722). Results of zero-inflated negative binomial models of jail costs indicate that FACT participants were more likely to be in the “no jail costs” group during both the first 12 months, although there were no significant differences in the count portion of the model (i.e., costs among those with any cost). Per person jail costs were lower for FACT in the first 12 months ($814 vs. $2,226), and in months 13–24 ($2,043 vs. $3,019).

Discussion

This is one of the first randomized clinical trials reported in the literature testing whether FACT leads to reduced criminal justice involvement, reduced psychiatric hospitalizations, and reduced costs for offenders with serious mental illness and criminal justice involvement. The findings supported our hypotheses. In terms of criminal justice outcomes, FACT led to

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fewer bookings and a greater likelihood of staying out of jail in each year even though FACT did not result in shorter jail time if enrollees were booked into jail. In addition, FACT participants had fewer days of hospitalization compared to TAU participants. The increase in outpatient service costs was partially offset by a decrease in inpatient service costs and jail costs.

FACT programs have rapidly expanded across the country with little empirical data to support their effectiveness. The current study helps to fill this gap in knowledge and suggests that a forensically-oriented, high-fidelity ACT team can alter the criminal justice involvement of offenders with serious mental illness, reduce their time spent in inpatient psychiatric settings, while providing more appropriate outpatient services.

Providing intensive outpatient services can be costly, as evidenced by FACT participants having $8,000 more in per person outpatient service costs compared to participants in the treatment as usual (TAU) condition in the first 12 months. Yet, when reduced costs for inpatient and jail stays are factored in, FACT services were only $3,520 more per person than TAU in the first 12 months. The additional $3,848 per person spent on outpatient services for FACT in months 13–24 was offset by decreased per person inpatient costs ($2,890) and decreased per person jail costs ($976) for FACT in months 13–24. Studies of traditional (non-forensic) ACT teams have consistently demonstrated that the costs of providing intensive outpatient services are offset by reductions in hospital costs (Chandler et al. 1999; Essock et al. 1998; Lehman et al. 1999). Although the savings in inpatient and jail costs in the current study did not completely offset the additional outpatient costs, other criminal justice costs (i.e., court costs) that would have favored FACT are not included in our cost analyses.

Although providing the best data currently available about FACT effectiveness, the findings reported here are not definitive. Our reliance upon administrative data precludes any statement about the impact of FACT on clinical outcomes such as symptoms, functioning, or quality of life. Moreover, while the cost analyses in the current study favored the FACT condition, these analyses were limited to jail costs and behavioral health service costs and did not consider other societal costs of the intervention (Morse et al. 2006). Further, the study sample had a high proportion of Caucasians so the findings may not generalize to FACT programs serving mostly individuals from minority populations. Nonetheless, there is symmetry between our findings and the results usually found in experimental evaluations of ACT. ACT's most consistent effect is its ability to reduce hospitalizations, not its ability to improve clinical outcomes. The same may be true for FACT interventions of the type studied here. We have demonstrated that ACT can be adapted to reduce jail use as well as hospital use for offenders with serious mental illness. Further research is needed to determine whether or not clinical outcomes are also improved by FACT interventions.

The current study is also unable to answer whether the FACT level of intensity is required in all cases to achieve the positive outcomes reported here. If the primary goal is to keep people with mental illness out of jail, then there are a number of uncontrolled studies of jail diversion programs that suggest this can be accomplished by forensic adaptations of intensive case management programs (FICM) that are less costly than FACT (Lamberti et al. 2001; Steadman et al. 1999; Steadman and Naples 2005). The population of offenders with mental illness is quite diverse and there is a great need to determine who is best suited for interventions with varying levels of intensity and cost.

Finally, research—including this study—has yet to identify key ingredients of FACT, how it should differ from ACT, and the relative importance of criminal justice system versus mental health system characteristics of FACT programs (Cuddeback et al. 2009; Erickson et

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al. 2009). Future studies should evaluate well-defined models of FACT for different target groups using a variety of criminal justice and behavioral health outcomes.

Conclusion

Forensic adaptations of high-fidelity ACT programs can improve criminal justice and behavioral health outcomes for jail detainees with serious mental illness. Further research to refine the clinical model and cost-effectiveness of these programs is needed to strengthen the evidence-base and to support the dissemination of these interventions to communities across the country.

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Table 1

Participant characteristics at baseline

	FACT (*N* = 72)	**TAU (*N* = 62)**
	***N* (%)**	***N* (%)**
Demographic		
% Caucasian	44 (61%)	40 (65%)
% African-American	6 (8%)	5 (8%)
% Hispanic	16 (22%)	13 (21%)
% Male	43 (60%)	36 (58%)
Age—mean (SD)	38.8 (10.9)*	34.4 (8.9)
Clinical		
% Psychotic diagnosis	44 (61%)	45 (72%)
% Affective diagnosis	21 (29%)	15 (24%)
% Comorbid substance abuse	55 (77%)	40 (64%)
Criminal involvement		
% Any booking prior 12 months	69 (96%)	59 (95%)
% Any felony charges prior 12 months	41 (57%)	41 (66%)
% Any conviction prior 12 months	47 (65%)	42 (67%)
Bookings prior 12 months—mean (SD)	1.90 (1.75)	2.29 (3.53)
Jail days prior 12 months—mean (SD)	66.56 (78.37)	76.26 (73.01)
Convictions prior 12 months—mean (SD)	0.89 (0.91)	0.96 (0.90)
Mental health services		
% Any hospital use prior 12 months	42 (58%)	29 (47%)
% Any outpatient use prior 12 months	63 (88%)	52 (84%)
Hospital days prior 12 months—mean (SD)	13.72 (19.59)	7.09 (14.09)
Outpatient visits prior 12 months—mean (SD)	29.81 (35.68)	26.55 (35.11)

*$P < 0.05$

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Table 2

Zero-inflated negative binomial results for mental health services for FACT and TAU participants

	FACT Raw mean (SD)	TAU Raw mean (SD)	Negative binomial portion		Zero-inflated portion	
			IRR[a]	95% CI[b]	OR[a]	95% CI[b]
1–12 months						
Outpatient visits	95.9 (57.1)	43.3 (47.9)	2.23***	1.56–3.17	–	–
Hospital days	11 (34.7)	20.8 (56.2)	0.41*	0.17–0.97	0.59	0.24–1.49
Crisis contacts	1.10 (2.8)	1.98 (3.6)	0.88	0.51–1.53	–	–
13–24 months						
Outpatient visits	71.1 (65.4)	43.6 (72.0)	1.92***	1.32–2.78	–	–
Hospital days	8.3 (30.0)	19.7 (63.5)	0.43*	0.19–0.96	0.74	0.23–2.41
Crisis contacts	1.24 (2.4)	1.51 (2.5)	0.82	0.41–1.63	–	–

[a]Referent group for incident rate ratio (IRR) and odds ratio (OR) is TAU

[b]Confidence intervals that do not contain 1 are significant at the 0.05 level

*$P < 0.05$,

***$P < 0.001$

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Table 3

Zero-inflated negative binomial results for criminal justice contact for FACT and TAU participants

	FACT Raw mean (SD)	TAU Raw mean (SD)	Negative binomial portion		Zero-inflated portion	
			IRR[a]	95% CI[b]	OR[a]	95% CI[b]
1–12 months						
Bookings	0.64 (1.2)	1.42 (1.86)	0.45**	0.28–0.73	–	–
Jail days	18.5 (45.3)	35.3 (56.9)	0.52	0.21–1.31	3.38*	1.36–8.38
Convictions	0.75 (0.77)	0.85 (1.03)	0.88	0.59–1.33	–	–
13–24 months						
Bookings	0.57 (1.13)	0.89 (1.82)	0.51**	0.30–0.87	–	–
Jail days	20.5 (63.7)	30.5 (51.6)	0.62	0.25–1.55	2.41‡	0.98–5.92
Convictions	0.38 (0.73)	0.55 (0.90)	0.68	0.34–1.34	–	–

[a] Referent group for rate ratio and odds ratio is TAU

[b] Confidence intervals that do not contain 1 are significant at the 0.05 level

* $P < 0.05$,

** $P < 0.01$,

‡ $P < 0.06$

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Table 4

Zero-inflated negative binomial results for mental health and criminal justice costs for FACT and TAU participants

	FACT Raw mean (SD)	TAU Raw mean (SD)	Negative-binomial portion		Zero-inflated portion	
			IRR[a]	95% CI[b]	OR[a]	95% CI[b]
Costs—first 12 months						
Inpatient cost	$5,530 (12,414)	$8,827 (19,289)	0.54*	0.31–0.95	0.79	0.39–1.59
Outpatient costs	$13,481 (9,547)	$5,118 (6,184)	2.63***	1.70–4.08	–	–
Jail cost	$1,848 (4,533)	$3,530 (5,690)	0.52	0.15–1.80	2.86*	1.39–5.86
Costs—13–24 months						
Inpatient cost	$4,296 (11,467)	$7,141 (16,678)	0.60‡	0.35–1.01	0.94	0.47–1.89
Outpatient costs	$7,836 (7,844)	$4,249 (7,028)	2.24***	1.46–3.43	–	–
Jail cost	$2,050 (6,369)	$3,046 (5,163)	0.62	0.19–2.03	2.20*	1.02–4.74

[a] Referent group for rate ratio and odds ratio is TAU

[b] Confidence intervals that do not contain 1 are significant at the 0.05 level

* $P < 0.05$,

*** $P < 0.001$,

‡ $P < 0.06$