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Modified therapeutic community aftercare for clients triply diagnosed with HIV/AIDS and co-occurring mental and substance use disorders

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Abstract

This clinical trial evaluated a modified therapeutic community aftercare (MTC-A) program for a population triply diagnosed with HIV/AIDS, a substance use disorder, and a mental disorder. After six months of MTC residential treatment (MTC-R), subjects were randomly assigned to MTC-A ($n = 42$) or to standard aftercare (C; $n = 34$). Follow-up interviews at six and 12 months assessed eight outcome domains and adherence to prescribed HIV medication. A propensity model was used to re-balance the retrieved sample. At the six-month follow-up, *High* stratum MTC-A clients (those with greater psychological functioning and stable physical health at baseline) had greater improvement overall and for substance use and mental health than C clients in the same stratum. In contrast, C clients in the *Low/Medium* stratum (those with poorer psychological functioning and improved physical health) had more favorable outcomes overall and for substance use than their MTC-A counterparts; however, this stratum was not re-balanced effectively. Differences in HIV medication adherence were not detected. Clients with greater psychological functioning and stable health at treatment entry benefit more from the MTC-A program. In view of the potentially progressive nature of HIV, measuring physical and mental health during treatment and controlling for changes could be important in future research.

Keywords

HIV; AIDS; co-occurring disorders; modified therapeutic community; aftercare; triply diagnosed population; clinical trial

Background/introduction

Among adults with HIV, large-scale studies have reported the prevalence of co-occurring mental health and substance abuse disorders to be between 13% (Galvan, Burnam, & Bing,

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2003) and 28% (Dausey & Desai, 2003). Among male intravenous drug users, those with an HIV infection had a higher prevalence of depressive disorders (33%) than those without (20%) (Johnson, Rabkin, Lipsitz, Williams, & Remien, 1999; Rabkin et al., 1997). Similarly, among those with schizophrenia, substance use disorders have been more prevalent (Walkup, Crystal, & Sambamoorthi, 1999).

Psychological symptoms are detrimental to substance abuse treatment retention and outcomes (Drake & Mueser, 2000; McLellan, Woody, Luborsky, O'Brien, & Druley, 1983; Rounsaville, Tierney, Crits-Cristoph, Weissman, & Kleber, 1982), evident in higher rates of HIV infection, drug relapse, rehospitalization, and depression (Drake et al., 1998; US Department of Health and Human Services [DHHS], 1999). The interaction of psychological problems with substance misuse has increased sexual and injection HIV-risk behaviors (e.g., Dausey & Desai, 2003), while other researchers have reported an association between co-occurring disorders and adherence to antiviral therapy (Chander, Himelhoch, & Moore, 2006). Given the associations among HIV-risk behaviors, psychological dysfunction and substance use disorders, the advantages of integrating prevention and treatment services for HIV/AIDS, mental health, and substance abuse are clear.

The therapeutic community (TC) model, modified for male offenders with co-occurring disorders, has been described (Sacks, Sacks, & Stommel, 2003), and has produced significant treatment effects for reincarceration (Sacks, Sacks, McKendrick, Banks, & Stommel, 2004), criminal activity, and substance use (Sullivan, McKendrick, Sacks, & Banks, 2007). Research has shown that modified therapeutic community aftercare (MTC-A) treatment maintained and stabilized some of the gains achieved during MTC residential (MTC-R) treatment, while other improvements were incremental and continuous throughout both programs (e.g., Sacks, De Leon, McKendrick, Brown, & Sacks, 2003), although the potential for selection bias into aftercare has not been eliminated.

Recent advances in treatment have extended the survival of those with HIV/AIDS, creating a corresponding increase in the demand for mental health and substance abuse services. A considerable body of work documents and evaluates residential and aftercare programs for clients with co-occurring disorders (Sacks, Chandler, & Gonzales, 2008), but little is known about programs adapted for those who also have HIV/AIDS. This paper describes a randomized clinical trial of MTC-A following MTC-R treatment for a population with HIV/AIDS as well as co-occurring substance use and mental disorders.

Methods

Research design

Men and women who completed the MTC-residential (MTC-R) program, "People With Hope," were randomly assigned either to the experimental (E) condition, MTC-A, or to the control (C) condition, standard aftercare services. Everyone who entered the MTC-R program met study eligibility criteria for HIV/AIDS (Centers for Disease Control and Prevention [CDC], 1993) and co-occurring disorders (DSM-IV diagnostic criteria using the *Structured Clinical Interview*; American Psychiatric Association, 1994; First, Gibbon, Spitzer, Williams, & Benjamin, 1997; First, Spitzer, Gibbon, & Williams, 2002). Earlier

work (Sacks, De Leon, Bernhardt, & Sacks, 1998; Sacks, Sacks, De Leon, Bernhardt, & Staines, 1997) informed the alteration of TC elements for this triply diagnosed population. (A full description of the MTC-R program is available from the authors.) The research team generated random numbers to determine group membership. The designated treatment group was sealed in an envelope, and the envelopes were marked with a sequential identification number. On completing the informed consent procedure, the research interviewer gave each subject an identification number and the corresponding envelope was opened to reveal group assignment.

Subjects were evaluated on entering the MTC-R program (residential baseline), and on entering aftercare (aftercare baseline, “AB”); follow-up assessments were conducted at six and 12 months after AB. Aftercare treatment effects reported in this paper include 22 outcomes in eight domains: substance use, criminal activity, mental health, social functioning, physical health, employment, HIV risk behaviors, and residential stability. Adherence to HIV medication regimen was also assessed.

Treatment conditions

MTC aftercare treatment (MTC-A)—experimental (E) condition—The MTC-A group attended an integrated MTC-A program of outpatient activities delivered in the residential facility over a planned duration of six months. At the time of this study, Philadelphia’s treatment systems (substance abuse, mental health, health care) operated under discrete funding streams and did not integrate services; the MTC-A program was established to ensure treatment continuity for triply diagnosed individuals and to assist their transition to more independent functioning in the community. The MTC-A trained and facilitated client-level integration to bridge gaps in care coordination, and supplied tools to help clients adhere to and track vital treatment elements to bridge gaps in services. Clients were taught to use their understanding of TC philosophy to coordinate service components, and to promote communication among service providers; clients learned to integrate their own treatment. This client-level approach proved to be a viable means of integrating services rapidly and effectively for this population, and was consonant with the TC, which uses the peer recovery community to support clients’ efforts to take responsibility for their own lives. Table 1 provides a synopsis of program elements and interventions of the MTC-A experimental (E) condition.

Standard aftercare – control (C) condition—Standard aftercare services (the C condition) consisted of substance abuse counseling at an outpatient substance abuse treatment program, mental health counseling at an outpatient mental health treatment program, continuing medical treatment at a community medical/HIV clinic, and vocational/educational counseling services, if needed (MTC-A clients received these same services). Community-based treatment and advocacy agencies provided a case manager for each HIV+ client, which meant that clients had multiple case managers, each reporting to a different agency and each responsible for discrete aspects of care. On discharge from the MTC-R program, clients were given an aftercare plan that included referrals and scheduled appointments for needed services (substance use and mental health counseling, medical treatment, educational and vocational services). One month after discharge, a staff counselor

from the MTC-R program scheduled a visit to review clients' housing, household management, and ability to schedule and access medical and clinical services, providing limited help to clients in coordinating their various aftercare providers.

Sample

Of the 135 clients who entered the MTC-R program, 76 completed the residential treatment program and were randomized into aftercare treatment. Between 5 April 2000 and 25 August 2003, 42 (55%) subjects were assigned to the MTC-A program (E) and 34 (45%) to the C condition. To establish the treatment group, randomization into the E condition was initially three to one, which resulted in the inequality between groups. Follow-up retrieval was 76% (58 subjects) at six months, and 72% (55 subjects) at 12 months; 88% (45/55 subjects) were retrieved at both points. Retrieval rates for the two treatment conditions were similar at six months (74% E and 79% C), but at 12 months, considerably more E (81%) than C (62%) subjects were retrieved. Three E subjects died during the study before follow-up data could be gathered.

Few differences between retrieved subjects and those lost to attrition were apparent at the six-month follow-up. Retrieved subjects were older (41 years vs. 36 years), more likely to be female (45% vs. 11%), and less likely to report living in a homeless shelter in the three months prior to the residential baseline interview (4% vs. 22%).

Instrumentation/measures

Face-to-face interviews collected self-reported information on measures from seven standard instruments; the *Addiction Severity Index-Lite* (ASI-L) (Cacciola, Alterman, McLellan, Lin, & Lynch, 2007; McLellan, Cacciola, Carise, & Coyne, 1999), the Center for Therapeutic Community Research (CTCR) *Baseline Interview Protocol* (CTCR, 1992; De Leon, 1991; Sacks, 1997), the *Risk Assessment Battery* (RAB) (Navaline et al., 1994), the *Risk Behavior Assessment* (RBA) (Dowling-Guyer et al., 1994), *Short Form-36 Health Survey* (SF-36) (Ware, Snow, Kosinski, & Gandek, 1993), the *Beck Depression Inventory-II* (BDI-II) (Beck, Steer, & Brown, 1996), the *Brief Symptom Inventory* (BSI) that includes the *Global Severity Index* (GSI) (Derogatis, 1993), the *Brief Psychiatric Rating Scale* (BPRS) (Ventura, Green, Shaner, & Liberman, 1993), and the *Structured Clinical Interview for DSM-IV* (SCID) (First et al., 1997, 2002; Kranzler, Kadden, Babor, Tennen, & Rounsaville, 1996). The residential baseline interview took approximately two hours to complete plus 90 minutes for SCID; all other interviews were completed within an hour.

A total of 22 outcomes were assessed in eight domains. The substance use domain included four outcomes describing use in the last six months: any alcohol intoxication; frequency of alcohol intoxication; any drug use; frequency of drug use. Crime included any illegal activity for profit in the last month and any time spent in jail in the previous six months. The mental health domain included the BDI-II the GSI, and the SF-36 mental health component. Social functioning was based solely on the SF-36 social functioning composite. The physical health domain included four outcomes: a four-point health rating; the SF-36 physical health component score; emergency room treatment in the last three months; and inpatient hospital treatment in the last three months. Employment was assessed as any employment in the

previous month. Five outcomes were included in the HIV-risk behavior domain, all regarding behaviors reported in the last three months: any needle use; having unprotected sex with someone who is HIV- or whose serostatus was unknown; having sex while high; exchanging sex for money or drugs; and the number of sex partners. Finally, residential stability included two outcome measures: currently in stable housing; and spending one or more nights in unstable housing in the previous six months.

Analytic plan

Propensity analysis—Propensity analysis is a statistical technique used to adjust for non-equivalencies between groups (Rubin, 1997). Using stepwise logistic regression of baseline characteristics, a predictive model of treatment assignment was developed and an aggregate covariate – the propensity score was –computed. The most parsimonious propensity model consisted of physical health now compared to a year ago (AB; 1 = much better; 2 = somewhat better; 3 = about the same; 4 = somewhat worse; 5 = much worse), the SF-36 mental health component (AB); “spent time in a jail/halfway house (in the past six months) because there was nowhere else to go”; and the number of days in MTC-R treatment. Subjects with the same propensity score share the same multivariate distribution of covariates; therefore, the propensity score was used to match subjects, and to exclude those for whom few or no equivalent subjects exist.

The total sample was first divided into *High*, *Medium*, and *Low* propensity strata; the *Low* and *Medium* propensity strata were combined to provide an adequate number of subjects in both treatment conditions. The two treatment groups within each stratum were then compared to explore equivalency. In the *High* propensity stratum, no differences between E and C groups emerged, indicating that the treatment groups were re-balanced; however, for the *Low/Medium* stratum, a significant difference between E and C did emerge for the SF-36 mental health component, indicating that the combined *Low/Medium* stratum was not re-balanced, which should be taken into account when interpreting results.

The *High* propensity stratum consisted of subjects with greater psychological functioning and stable physical health, whereas the *Low/Medium* stratum contained subjects with poorer psychological functioning and better physical health. Compared to the *Low/Medium* stratum, subjects in the *High* stratum reported greater mental health functioning (56.20 vs. 46.54; $p < 0.002$), little change in physical health (2.56 vs. 1.34; $p < 0.001$), and fewer days of treatment (119.8 vs. 150.8; $p < 0.04$). The measure of time spent in jail/halfway house because the subject “had nowhere else to go” had a significant impact on the propensity model, but did not result in significant differences between the propensity strata (33% vs. 18%; $p < 0.22$).

Impact of E (MTC-A)

Effect sizes were calculated to evaluate aftercare treatment effects occurring between residential baseline and six- and 12-month assessments. Hedge’s g effects (Rosenthal, 1994, p. 237) were scaled so that negative effects indicated greater improvement for the E (MTC-A) condition. A “top-down” analytical approach (McKendrick, Sullivan, Banks, & Sacks, 2006; Quezado et al., 1998; Sacks, McKendrick, & Banks, 2008; Sacks, Sacks et al., 2008;

Sacks, Sacks, McKendrick, Pearson, & Banks, 2004) was used, testing all 22 variables together to see whether the overall average effect size was significantly different from zero before investigating the individual domains. A one-sample *t*-test was used to determine whether the average effect was significantly greater than zero. If the overall test was statistically significant, individual assessments of the eight outcome domains were conducted. Kruskal – Wallis tests for mean rank were used to compare the Hedge's *g* effect sizes between the *Low/Medium* and *High* propensity strata.

Results

Sample

As shown in Table 2, study subjects were predominantly minority (95%) and male (63%), with an average age of 40 (range 21 – 56). Most had never married (75%), and half (52%) had less than a high school (or GED) education. All subjects had SCID diagnoses of substance abuse/dependence (100% drug and 56% alcohol) plus at least one mental disorder (79% Axis I and 77% Axis II). Over two-thirds (67%) had a mood disorder; 77% had a personality disorder, and 46% had a psychotic disorder. Forty-three percent described their health as “fair” or “poor,” and 16% said their health was worse than it was a year before the residential baseline interview. Over half (51%) reported ever having hepatitis (A through C), 45% any sexually transmitted disease (STD), 25% genital herpes, and 27% pneumonia. Other indicators of dysfunction included a lifetime history of trauma/abuse (44%), a criminal conviction (77%), incarceration (60%), literal homelessness (58%), and/or a history of intravenous drug use (49%). Information on viral load and CD4 cell counts was not collected as part of the study (the instruments and measures used were determined within a cooperative agreement); some medical information was obtained, but inconsistencies (e.g., recentness of test results) limited its validity.

MTC-A treatment effects at six-month follow-up

Table 3 shows a significant overall treatment effect favoring the E condition at a six-month follow-up for the *High* propensity stratum (Hedge's *g* -0.34 ; $p < 0.002$). Further investigation of the outcomes for this stratum showed domain-level effects favoring the E condition for all eight outcome domains, with significant treatment effects emerging for substance use (-0.63 ; $p < 0.02$) and mental health (-0.52 ; $p < 0.03$).

For the *Low/Medium* propensity stratum (not effectively re-balanced due to sample size constraints), a significant overall treatment effect favored the C condition (0.25 ; $p < 0.01$), while a domain level significant treatment effect was detected only for substance use (0.34 ; $p < 0.02$).

A comparison of the Hedge's *g* effect sizes for the *Low/Medium* and *High* propensity strata using Kruskal – Wallis tests indicated significant differences for the overall Hedge's *g* effects ($p < 0.001$), as well as for the domains of substance use ($p < 0.03$) and mental health ($p < 0.05$). Although overall treatment effects differed, it is important to note that none of the four study groups worsened significantly on any outcome measure during the follow-up period (see Table 4).

MTC-A treatment effects at 12-month follow-up

For the *High* propensity stratum, 12-month findings were consistent with those at six months in direction but not in significance. Although the majority of Hedge's g effects (15 of 22, or 68%) favored the E condition, the overall effect was not significant -0.15 ($p < 0.22$).

Significant MTC-A treatment effects emerged for two domains, the substance use domain (-0.61 ; $p < 0.02$) and the physical health domain (-0.25 ; $p < 0.05$), with the latter showing an increase in magnitude at 12 months compared to six months. For the mental health domain, a non-significant positive effect emerged (0.57 ; $p < 0.19$), which was inconsistent with the six-month finding.

For the *Low/Medium* propensity stratum, the overall effect continued to favor the C group (0.22 ; $p < 0.03$); however, the substance use domain no longer showed significant treatment effects. The Kruskal – Wallis mean rank tests comparing the effects for the two propensity strata were significant for the overall effect and for the substance use domain. Again, despite significant treatment effects for the two propensity strata, none of the four study groups reported significant worsening on any outcome measure during the follow-up period.

HIV medication adherence

The treatment conditions and propensity groups were similar in adherence to HIV medication. At the six-month follow-up, 38% of MTC-A clients in the *High* propensity stratum reported skipping HIV medication in the last month, compared to 50% of those in the C condition. In the *Low/Medium* stratum, the rates were 33% for MTC-A and 32% for C.

Discussion

Summary

Moderate treatment effects favoring MTC-A treatment emerged for participants in the *High* propensity stratum; significant effects were detected overall, for substance use, and for mental health. The *High* stratum was the only propensity group to be adequately re-balanced for measures in which differences between the retrieved E and C groups were apparent at (or before) randomization. *High* stratum clients reported the highest psychological functioning, and little change in their physical health in the year preceding the AB interview, which indicates that a six-month aftercare program could be of most benefit to those who enter treatment with higher functioning and stable health.

The findings support earlier research in three key ways. *First*, this study points to continued benefits from MTC programming in aftercare. Subjects who continued MTC treatment in aftercare reported greater gains or sustained the improvements acquired during residential treatment, which mirrors findings in other co-occurring disorders populations (i.e., offenders; Sacks, Sacks, McKendrick, Banks et al., 2004). *Second*, substance use and mental health were two of the outcome domains in which treatment effects favoring the MTC-A was greatest. In a recent synthesis of three studies of subjects with co-occurring disorders (Sacks, McKendrick, Sacks, & Cleland, 2010), significant MTC treatment effects were detected for five of six outcome domains, including substance use, mental health, crime,

employment, and housing. *Finally*, this study found that, although the direction of the effects was maintained at a 12-month follow-up, the magnitude of the treatment effects had diminished, many of which were no longer significant.

Limitations

Sample—This study was limited to participants in Philadelphia who were HIV+ with co-occurring mental and substance abuse disorders, and who completed MTC-R (residential) treatment. Retrieval rates at follow-up assessments (76% at six months and 72% at 12 months) also influenced sample size limitations. Findings may not extrapolate to triply diagnosed clients who do not complete residential treatment, who are located in other regions, or who are from other ethnic/racial groups (the sample was predominately African American/Black).

Residential vs. aftercare effects—Subjects in both treatment conditions reported significant improvement during MTC-R (modified TC residential) treatment, which occurred prior to randomization, so differences between the E and C aftercare groups were not expected. Significant MTC-R treatment effects for the combined sample emerged for seven of the eight outcome domains and for 14 of 22 measures ($p < 0.05$); however, these residential effects overshadowed findings attributable to the MTC-A program, and the “floor effect” of many outcomes (De Leon, Sacks, Staines, & McKendrick, 2000; Sacks, De Leon et al., 2003) constrained the ability to detect the benefits of aftercare.

Conclusion

For clients with greater psychological functioning and stable health, moderate treatment effects favoring MTC-A treatment were found overall as well as for substance use and mental health. This suggests that a six-month MTC-A program could be of most benefit to those who enter treatment with higher functioning and stable health. These results should be viewed with caution due to the small sample size and the fact that among subjects with poorer psychological functioning and improved physical health, the comparison condition demonstrated significantly better outcomes for some variables (i.e., substance use).

Nonetheless, results indicated that aftercare can help to maintain, or even enhance, treatment gains achieved during residential treatment. Further research into efforts to enhance benefits of aftercare programming for patients with varying levels of functioning is warranted.

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Table 1

MTC aftercare (MTC-A) interventions.

Health and self-management group	<ul style="list-style-type: none"> • Meets weekly to address health, medication, and other HIV/AIDS issues • Aims to improve health status by focusing on and facilitating treatment adherence • Uses a <i>Health Management and HIV/AIDS Monitoring Form</i> to assess attendance at medical appointments, adherence to medical and medication treatment regimens, monitoring HIV/AIDS serostatus
Peer group	<ul style="list-style-type: none"> • Meets weekly to focus on advocacy issues for the HIV/AIDS patient • Promotes understanding of the nature of addiction and recovery from addiction • Uses role-playing and skills training to practice communicating with aftercare providers • Supports continued recovery through assistance with social issues • Focuses on, and reinforces, changes in self-perception from negative images of HIV/AIDS status, substance Abuse, and psychiatric problems to positive perceptions with increasing self mastery, "right living," concern for others, and contributions to society • Derives and reinforces deeper changes from the achievements of sobriety and stability
Self-help group	<ul style="list-style-type: none"> • Weekly informal social meetings combine features of residential TC morning, evening, & house meetings with socialization activities • Permits informal discussion regarding the living environment, health, and services • Facilitates individual empowerment, peer problem solving, community perspective • Extends the sense and perception of community beyond the residential TC program facility
Individual case assistance	<ul style="list-style-type: none"> • Meets bi-weekly; staff spends an additional five hours per week on each case, providing individual counseling and assisting with aftercare coordination • Assists clients to navigate the network of aftercare providers • Allows discussion of service needs, plan of services, and use of systems and services • Develops a base of information on available services (e.g., names, phone numbers, hours) • Uses scripts and role-playing to help clients practice interactions with aftercare providers • Replaces traditional case management, and reflects the TC approach of peer self-help • Helps client to assume responsibility for assuring that his/her service needs are met
Family support group	<ul style="list-style-type: none"> • Meets monthly to involve the family and significant others in issues, concerns, and plans for the HIV/AIDS client in aftercare in a multiple support group • Promotes understanding of HIV/AIDS status, treatment plans, and outlook for the future • Focuses on mutual understanding of the disease, interpersonal issues, communication, housing; providing support and planning for the future • Encourages family participation in a non-threatening manner • Encourages individual sessions with the psychiatric social worker and aftercare counselor to address private issues not wanted to discuss in the group

Table 2

Profile of sample.

Measures	Total (n = 76) %/Mean (Std)	E (MTC-A) (n = 42) %/Mean (Std)	C (n = 34) %/Mean (Std)	p	Low/Medium (n = 46) %/Mean (Std)	High (n = 21) %/Mean (Std)	p
Gender							
Male	63	59.5	68	0.465	61	52	0.513
Ethnicity							
Minority	95	95	94	0.828	93.5	95	0.778
Age	39.8 (8.1)	39.2 (7.6)	40.4 (8.7)	0.543	39.8 (8.3)	39.8 (6.3)	0.981
Marital status							
Never married	75	76	73.5	0.837	73	81	0.501
Education							
<HS diploma/GED	52	46	59	0.280	53.5	62	0.524
SCID							
Drug depend/abuse	100	100	100	–	100	100	–
Alcohol depend/abuse	56	57	53	0.822	53	62.5	0.550
Axis I diagnosis	79	73	93	0.103	80	81	0.919
Axis II diagnosis	77	76	80	0.737	83	75	0.497
Mood disorder	67	65	73	0.555	63	75	0.421
Personality disorder	77	76	80	0.737	83	75	0.497
Psychotic disorder	46	49	40	0.571	50	44	0.686
Health							
Fair/poor	43	41.5	44	0.817	47	33	0.307
Worse than a year ago	16	22	9	0.123	16	19	0.723
Hepatitis A – C	51	47.5	56	0.472	21	29	0.530
Herpes	25	17.5	34	0.100	50	48	0.857
STD	45	54	35	0.112	47	38	0.513
Pneumonia	27	32.5	21	0.250	27	33	0.577
Lifetime events							
Trauma/abuse	44	46	41	0.654	49	38	0.412
Criminal conviction	77	76	79	0.695	80	76	0.724

Measures	Total (n = 76) %/Mean (Std)	E (MTC-A) (n = 42) %/Mean (Std)	C (n = 34) %/Mean (Std)	p	Low/Medium (n = 46) %/Mean (Std)	High (n = 21) %/Mean (Std)	p
Incarceration	60	56	65	0.449	56	67	0.392
Homeless	58	62.5	43	0.353	58	58	0.850
IV drug use	49	52	44	0.474	43.5	62	0.162

Notes:

* $p<0.05$;

** $p<0.01$;

*** $p<0.001$. SCID, structured clinical interview for DSM disorders, data available for 52 subjects (37 E & 15 C; 30 Low/Medium propensity and 16 High propensity). Drug/alcohol depend/abuse, drug/alcohol dependence or abuse disorder; STD, sexually transmitted disease; IV, Intravenous.

Table 3

Hedge's g effect sizes at six-month follow-up by propensity strata.

Change scores for outcomes (baseline to 6M follow-up)	Number of Items	Low/Medium propensity – Improved physical health	High propensity – Greater psychological functioning
		E (MTC-A) vs. C Hedges g (p)	E (MTC-A) vs. C Hedges g (p)
Overall/total	22	0.25 (0.01 ^{**})	−0.34 (0.002 ^{**})
Substance use	4	0.34 (0.02 [*])	−0.63 (0.02 [*])
L6 any alcohol intoxication		0.35	−0.65
L6 frequency of alcohol intoxication		0.43	−0.28
L6 any drug use		0.14	−0.79
L6 sum of frequencies of drugs used		0.42	−0.79
Crime	2	−0.15 (0.17)	−0.42 (0.17)
Mental health	3	0.37 (0.10)	−0.52 (0.03 [*])
BDI total score		(N/A)	−0.44
GSI total		(N/A)	−0.41
SF-36 mental health component		(N/A)	−0.70
Social functioning	1	0.44 (N/A)	−0.32 (N/A)
Physical health	4	−0.06 (0.65)	−0.04 (0.91)
Employment	1	0.63 (N/A)	−0.70 (N/A)
HIV risk behavior	5	0.50 (0.11)	−0.28 (0.39)
Residential stability	2	−0.01 (0.76)	−0.02 (0.84)

Notes:

^{*}
 $p < 0.05$;^{**}
 $p < 0.01$;^{***}
 $p < 0.001$; M, months; L6, last 6 months.

Table 4

Change from baseline to six-month follow-up by propensity strata.

Change for outcomes (baseline to 6M follow-up)	Low/Medium propensity			High propensity		
	E (MTC-A)		C	E (MTC-A)		C
	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)
Substance use						
L6 any alcohol intoxication	Baseline	68.8	78.3	61.5	50.0	
	6M F/U	12.5	8.7	7.7	25.0	
L6 frequency of alcohol intoxication ^a	Baseline	6.8 (2.4)	6.5 (2.2)	6.3 (2.3)	7.5 (0.7)	
	6M F/U	2.7 (2.1)	0.6 (1.8)	0.4 (1.1)	1.0 (1.4)	
L6 any drug use	Baseline	81.3	78.3	84.6	75.0	
	6M F/U	12.5	13.0	15.4	50.0	
L6 sum of frequencies of drugs used	Baseline	12.9 (7.2)	17.8 (8.7)	15.9 (7.5)	8.3 (5.7)	
	6M F/U	0.6 (1.9)	2.1 (4.7)	0.4 (0.9)	1.3 (1.9)	
Crime						
L1 any illegal activity for profit	Baseline	5.9	13.0	7.7	0.0	
	6M F/U	0.0	0.0	0.0	0.0	
L6 any time in jail	Baseline	31.3	30.4	53.8	50.0	
	6M F/U	6.3	8.7	0.0	0.0	
Mental health						
BDI total score	Baseline	16.1 (6.7)	18.9 (10.0)	15.3 (3.7)	15.3 (11.9)	
	6M F/U	13.1 (11.9)	8.2 (6.6)	10.0 (10.9)	16.5 (8.4)	
GSI total	Baseline	45.3 (4.0)	47.7 (9.0)	42.0 (10.3)	41.8 (7.4)	
	6M F/U	38.6 (9.2)	36.4 (10.1)	39.0 (7.7)	42.3 (5.9)	
SF-36 mental health component	Baseline	42.4 (11.8)	37.6 (13.0)	43.5 (10.4)	43.1 (9.1)	
	6M F/U	46.5 (14.2)	47.2 (13.7)	49.5 (11.1)	41.6 (13.2)	
Social functioning						
SF-36 social functioning	Baseline	46.6 (11.3)	38.5 (13.7)	13.2 (13.9)	43.6 (11.3)	
	6M F/U	44.9 (12.6)	46.5 (11.5)	47.5 (12.0)	46.3 (7.7)	
Physical health						
Health rating ^b	Baseline	3.0 (1.2)	3.0 (1.1)	3.0 (1.0)	3.5 (0.6)	

Change for outcomes (baseline to 6M follow-up)	Low/Medium propensity			High propensity		
	E (MTC-A)		C	E (MTC-A)		C
	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)	%/Mean (Std)
SF-36 physical health component	6M F/U	2.9 (1.2)	3.0 (1.0)	3.1 (1.0)	4.3 (0.5)	
	Baseline	44.9 (9.0)	47.2 (10.3)	42.0 (10.4)	42.6 (14.0)	
	6M F/U	45.5 (7.3)	47.6 (10.1)	42.8 (12.9)	48.8 (6.6)	
	Baseline	25.0	34.8	38.5	25.0	
L3 any emergency room	6M F/U	25.0	13.0	38.5	0.0	
	Baseline	25.0	26.1	38.5	25.0	
	6M F/U	18.8	8.7	30.8	0.0	
	Baseline	6.3	4.3	0.0	0.0	
L1 any employment	6M F/U	18.8	26.1	30.8	0.0	
	Baseline	12.5	21.7	0.0	25.0	
	6M F/U	0.0	4.3	0.0	0.0	
	Baseline	12.5	26.1	76.9	50.0	
L3 any unprotected sex with HIV-/unknown	6M F/U	18.8	4.3	33.3	50.0	
	Baseline	12.5	26.1	30.8	25.0	
	6M F/U	0.0	4.3	0.0	25.0	
	Baseline	6.7	17.4	30.8	25.0	
L3 any sex while high	6M F/U	0.0	0.0	0.0	25.0	
	Baseline	0.8 (1.6)	0.9 (1.3)	1.5 (2.7)	1.3 (1.9)	
	6M F/U	1.0 (0.8)	0.8 (0.6)	1.2 (0.6)	2.5 (3.0)	
	Baseline	12.5	10.5	15.4	0.0	
Residential stability	6M F/U	68.8	36.8	61.5	66.7	
	Baseline	62.5	60.9	61.5	75.0	
	6M F/U	37.5	56.5	46.2	25.0	
	Baseline	12.5	10.5	15.4	0.0	

Notes: M, months; F/U, follow-up; L1, last month; L3, last 3 months; L6, last 6 months.

^a Alcohol intoxication: 0 never, 1 once, 2 two to three times, 3 once/month, 4 once/two weeks, 5 once/week, 6 two to three times/week, 7 four to five times/week, 8 almost every day, 9 every day.

^b Health rating: 1 excellent, 2 very good, 3 good, 4 fair, 5 poor.