# Beyond the Bridge: Evaluating a Novel Mental Health Program in the New York City Jail System

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*Objectives.* We evaluated Beyond the Bridge, a novel mental health program in the New York City jail system designed to provide residentially based cognitive behavioral therapy in jail mental observation units.

*Methods.* We used propensity score matching and a dose–response analysis. Outcome measures included reduction in violent incidents and fights, reduction in uses of force by corrections officers, reduction in time spent on suicide watch and incidents of self-injurious behavior, and increased length of community survival.

*Results.* There were significant reductions in all outcomes when we compared program participants (n = 218) with an earlier cohort of patients residing on the mental observation unit before programming began (n = 413). However, when we compared program participants with a cohort of other patients residing on the units at the same time but who chose not to participate (n = 267), only time spent on suicide watch unit (rate ratio [RR] = 0.72; 95% confidence interval [CI] = 0.59, 0.89) and recidivism (RR = 0.70; 95% CI = 0.59,0.83) were significantly reduced.

*Conclusions.* This evaluation and the model we piloted may provide useful information for other settings contemplating similar interventions. (*Am J Public Health.* 2014;104:2212–2218. doi:10.2105/AJPH.2014.302126)

The concentration of persons with serious mental illness in jails and prisons is a growing problem for managers of these systems as well as patients who come to be incarcerated. As the proportion of jail and prison inmates with mental illness increases, so too does friction between these patients and the rigid correctional setting in which they are housed.[1] Approximately one third of persons admitted into the New York City jail system become recipients of mental health services while in jail, with one quarter of these patients diagnosed with mental illnesses meeting criteria for serious mental illness. Consequently, between 700 and 1000 of the approximately 12 000 inmates in the New York City jail system have serious mental illness at a given time. Most patients with a serious mental illness designation are housed in dedicated mental observation units (MOUs) that are staffed with specially trained security and mental health professionals. Patients who exhibit psychosis or other symptoms that cannot be effectively managed in these units are transferred to a nearby hospital forensic ward for a higher level of care. In the New York City jail system, the city's Department of Health and Mental Hygiene's Bureau of Correctional Health Services is responsible for all aspects of health care for the incarcerated. Security and general custody management in the jail system are the responsibility of the New York City Department of Correction.

In 2010, the Bureau of Correctional Health Services designed and implemented a new approach to improve mental health services for patients in the jail's dedicated mental health units. The broad goals of this program, named Beyond the Bridge, were to bring comprehensive mental health services into the units where these patients reside. Specifically, the program included group therapy, as well as individual encounters with social workers, psychologists, psychiatrists, and discharge planners. The rationale for this new approach was to reengage patients by using an inpatient psychiatric center treatment model while incentivizing patients' participation and to improve outcomes, including reductions in mental illness symptoms, violence while in jail, and recidivism.

The Beyond the Bridge program represents a significant shift in therapeutic treatment of the most acutely mentally ill patients within the New York City jail system. Overall, the goal of this program was to improve outcomes by bringing clinical and therapeutic interventions into housing areas where interactions with clinical personnel would be ongoing, instead of relying on sporadic contact with patients in medical clinics. Most of the patients in the MOUs were identified as having a serious mental illness, and they faced significant challenges in accessing mental health services outside of their housing areas because of lack of acuity, need for security escorts, and lack of continuity of mental health providers.

A significant challenge in treating mental illness in jail is the congregate setting in which the treatment occurs. For mentally ill inmates, jail can be a significantly disorienting experience, particularly for those living in dormitories of up to 50 people, all of whom may at certain times be experiencing troubling symptoms, and many of whom have other complicating medical conditions such as epilepsy, drug addiction, or diabetes and may be less compliant with prescribed medication regimens than the population at large. Jail—with little to do every day, and with its many attendant rules and regulations that govern when and where one sleeps, whom one talks with and when, what one wears, and when and what one eats—is an especially challenging place for those who are severely mentally ill. In these conditions, and particularly for those with behavioral disorders, group therapy using a cognitive behavioral approach has been shown to be effective at reducing symptoms and managing behavior while creating a readiness and willingness to participate in treatment in jail and upon release.

## METHODS

To facilitate a shift in our treatment construct, we built offices on the housing units to ensure that clinicians would be present on the units throughout the day, rather than requiring patients to leave their units (often

under a security escort) to come to clinical offices in the another part of the jail. In addition to the 1-to-1 clinical encounter approach (i.e., having a clinician meet individually with a patient), we implemented treatment groups based on a curriculum developed with a partner company. Our clinical approach is based on evidence-based concepts of cognitive-behavioral therapy, motivational enhancement therapy, motivational interviewing, the social learning model, and key coping and problem-solving skills for relapse prevention (self-efficacy).[2,3] The 6-week treatment program covers a wide spectrum of topic areas, such as treatment engagement, medication compliance, coping skills, triggers, symptom awareness, feelings, and choices. The programming is flexible and fluid and allows for a rolling admission into the treatment milieu. We have had great success with a similar curriculum used in the A Road Not Taken substance abuse programs.[4]

Making clinical encounters easier and more frequent for both clinicians and patients, integrating increased individual treatment with group therapy, and formalizing a curriculum with an established program have changed the landscape on the housing units where the program was implemented. This specific cognitive-behavioral therapy promotes re-evaluation of dysfunctional emotions and behaviors to bring about change and reduce vulnerability to key risk factors. Motivational enhancement therapy seeks to promote change by making patients aware of problems and consequences of behavior. The motivational interviewing tools taught to patients are non-confrontational and gently provoke awareness without pushing patients. The significant cognitive-behavioral therapy and motivational interviewing–motivational enhancement therapy elements in these resources are easy to implement; they include lesson plans, *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*[5]-based treatment planning support for mental health programs, counselors' manuals, motivational interviewing–motivational enhancement therapy facilitators manuals, linkage to risk assessment instruments, behaviorally stated objectives, pre- and posttests, and competency checklists. In addition to regular sessions focusing on mental health concerns that use the core curriculum and workbooks, additional sessions are aimed at supporting the community reintegration process, focusing on the key risk factors affecting recidivism. As patients progress through the program curriculum and abide by the rules of the program, they are rewarded with incentives that range from commissary dollars to paid peer-leadership roles. The program was initially implemented in two 50-bed dormitory housing units and one 25-bed cell unit in a male facility; 1 year later, it was expanded to the women's jail. To assess the effectiveness of this novel approach to jail-based mental health services, we designed and conducted an evaluation that measured key mental health and custodial outcomes among program participants and nonparticipants.

Before the new program was implemented, both correctional staff and mental health providers (psychiatrists, psychologists, clinical social workers, and discharge planning staff) received a formal 2-day training on the program and curriculum. The objective of this training was both to educate the staff on all core elements of the program and to begin the essential process of forming a cohesive cadre of security and health professionals who were equally invested in the success of the program.

## Study Population

This evaluation consisted of 3 groups of mentally ill individuals who were incarcerated in a New York City jail. The first group (2011 treatment) included adult men who were detained in 1 of the 3 designated MOUs for at least 7 days between January 1, 2011 and June 30, 2011, and who participated in the program. The second group (2011 comparison) included those housed for at least 7 days in the same MOUs during the same time period who chose not to participate in the program. Given that participation was entirely voluntary and both groups shared a tightly controlled space, we selected a second control group (2010 comparison)—adult men detained in the same MOUs for at least 7 days during the period January 1, 2010 through June 30, 2010—to rule out a potential treatment effect on the 2011 comparison group. Because completing the first level of the program required 7 days of full participation, we could not determine whether those patients who resided in the MOU for less than 7 days were participating (i.e., receiving any treatment) or would have chosen to participate had they stayed longer. As a result, we excluded from all samples those who stayed in these MOUs for less than 7 days. The only demographic, clinical, or criminal characteristics that were associated with being excluded from the 2011 cohorts because of a stay in the MOU of less than 7 days were Axis II diagnoses, public administration criminal charges, and property criminal charges. The final data set contained 485 people from 2011 and 413 people from 2010. To obtain mental health and custodial outcomes, we matched patients' jail records with multiple data sources (e.g., health records, security databases, and log books) using unique identifiers common to all data sets. The primary difference in clinical contact in the treatment group compared with the 2 control groups was participation in group therapy sessions, which took place multiple times per day, while participating in the program. All patients, whether in the treatment or control groups, were afforded at least once-weekly mental health encounters with clinical social workers or psychologists, as well as regular encounters with psychiatrists and discharge planning staff. All of these encounters could be scheduled more frequently for patients who needed more intensive clinical contact, but these differences related to individual mental health acuity. Scheduling of these clinical services did not differ on the basis of program participation.

## Variables and Time at Risk

To be eligible for the treatment cohort, patients must have completed the first level of the program, which was attained after 7 days of full participation. To be eligible for the 2011 comparison group, patients must either have chosen not to participate at all, or have participated fully but failed to complete the first level of the program. Along with treating participation or nonparticipation as a binary treatment variable, we defined multiple levels of treatment on the basis of completion of each program level (levels 1 through 4). The study outcomes included acts of self-harm, placement on suicide watch (as well as placement in a dedicated suicide watch unit), being subject to use of force by security personnel, being found guilty of an infraction (leading to an administrative punishment for violation of jail rules), and recidivism (reentry on a new charge within 1 year of release from jail).

To account for different lengths of observation time among the study patients, for all outcomes except recidivism, we calculated person-time as days between MOU entrance date and the end of the study (June 30, 2011) or jail discharge date if discharge occurred prior to June 30, 2011. For the 2010 comparison group, we used the same method but with an end date of June 30, 2010. For recidivism, we redefined time at risk as time between jail discharge date and December 31, 2012 (for 2011 cohort) or December 31, 2011 (for 2010 cohort). By these dates, 91% of our study population had been released from jail for at least 1 year.

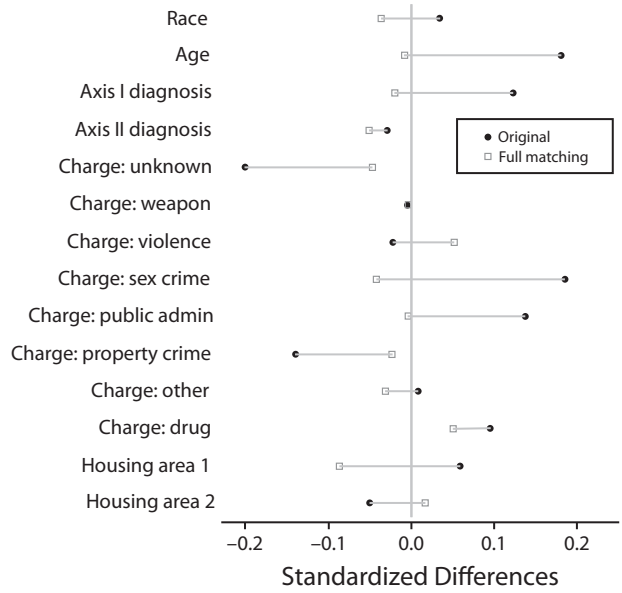
### Statistical Analysis

*Propensity score matching.* We employed propensity score matching to make baseline characteristics balanced between treatment and control groups. We first estimated the probability of receiving treatment using a logistic regression model with the baseline characteristics as predictors. These included race/ethnicity, age, various clinical conditions, types of criminal charges, and being placed in a particular housing unit. We then carried out optimal full matching, which has been proven to reduce covariate imbalance more effectively than other matching methods (e.g., 1-to-1 "greedy matching").[6,7] It yielded 157 matched sets, where 50% of matching was between 1 treatment person and 1 control person. We evaluated propensity score matching by calculating standardized difference in average covariate values between treatment and control groups. Observed covariate differences were very close to 0, suggesting that observed covariate imbalance by treatment became negligible and not of concern for estimating a treatment effect[8] (Figure 1).

*Analysis after matching.* To account for stratification attributable to propensity score matching and differential time at risk, we computed the Mantel–Haenszel rate ratio and variance for each of the study outcomes. A rate ratio of less than 1 can be interpreted as evidence that program participation was effective in reducing risk of mental health symptoms and violence.

*Dose–response analysis.* In addition, we performed dose–response analysis to test the hypothesis that a higher dose of the study participation (in this case, completing a higher level of the program, equivalent to more time spent participating fully) decreases the rate of negative outcome incidence. Participants completed level 1 (dose 1) if they fully participated in the program for 1 week. By participating in another week-long program designed for those who completed the level-1 program, they received level 2 (dose 2). Levels 3 and 4, corresponding to doses 3 and 4, were granted in a similar fashion, and dose 0 was assigned to nonparticipants. Because treatment (i.e., doses 0 through 4) was polytomous, we estimated the probability of receiving a particular dose of treatment using a multinomial regression model with the baseline characteristics as predictors. The estimated probability of being in a particular dose from the regression model allowed us to construct inverse probability treatment weights. To minimize influences from large weights, we stabilized inverse probability treatment weights by replacing 1 in the numerator with a marginal probability of the observed dose. We then ran marginal structural model with loglink function, an offset variable of time at risk, and stabilized inverse probability treatment weighting for each outcome to estimate a dose effect unconfounded by observed covariates. We obtained variance using sandwich estimators that were robust against model misspecification.

We tested statistical significance using 2-sided $P<.05$. We performed optimal full matching using the *optmatch* package in R 2.14.2 software (R Foundation for Statistical Computing, Vienna, Austria). We performed all other analyses using SAS version 9.2 (SAS Institute, Cary, NC).




*Note.* Participants and nonparticipants were mental health patients in 3 programmed housing units of the New York City jail system; 2011 participants (treatment) and nonparticipants (comparison) were in the units from January 1 to June 30, 2011, and 2010 nonparticipants (comparison) from January 1 to June 30, 2010.

**FIGURE 1—Propensity score matching for 2011 participants and nonparticipants of "Beyond the Bridge" mental health program: New York City jail system, 2010–2011.**

## RESULTS

Table 1 indicates that baseline characteristics were generally comparable between treatment and both comparison groups. Age at MOU admission among most study patients was between 26 and 55 years and evenly distributed in a 10-year interval. About half were non-Hispanic Blacks, followed by others (20%) and non-Hispanic Whites (18%). More than 80% of the 2011 cohort had 1 or more Axis I diagnoses and more than 60% had 1 or more Axis II diagnoses, whereas prevalence of mental health symptoms was substantially lower among the 2010 control group (Axis I: 57%; Axis II: 40%). The most prevalent

**TABLE 1—Descriptive Characteristics of Participants and Nonparticipants of "Beyond the Bridge" Mental Health Program: New York City Jail System, 2010–2011**

| Characteristic | Treatment Group (n = 218), % | 2011 Comparison Group (n = 267), % | 2010 Comparison Group (n = 413), % | 2011 Treatment vs 2011 Comparison | | 2011 Treatment vs 2010 Comparison | |
|---|---|---|---|---|---|---|---|
| | | | | $d_x$ | $d_{xm}$ | $d_x$ | $d_{xm}$ |
| Age at MOU admission, y | | | | | | | |
| ≤ 25 | 14 | 19 | 15 | 0.055 | 0.008 | 0.036 | 0.103 |
| 26–35 | 27 | 31 | 33 | 0.085 | 0.009 | 0.123 | 0.012 |
| 36–45 | 25 | 22 | 26 | 0.080 | 0.004 | 0.021 | 0.051 |
| 46–55 | 25 | 21 | 20 | 0.080 | 0.001 | 0.118 | 0.021 |
| ≥ 56 | 10 | 7 | 7 | 0.046 | 0.008 | 0.104 | 0.001 |
| Race/ethnicity | | | | | | | |
| Non-Hispanic White | 18 | 18 | 17 | 0.065 | 0.003 | 0.012 | 0.036 |
| Non-Hispanic Black | 54 | 54 | 55 | 0.150 | 0.000 | 0.016 | 0.064 |
| Hispanic | 3 | 3 | 2 | 0.023 | 0.005 | 0.072 | 0.003 |
| Asian/Pacific Islander | 1 | 4 | 1 | 0.013 | 0.006 | 0.021 | 0.049 |
| Other | 22 | 20 | 21 | 0.074 | 0.004 | 0.035 | 0.040 |
| Unknown | 3 | 2 | 5 | 0.024 | 0.001 | 0.120 | 0.010 |
| Mental health diagnoses | | | | | | | |
| Any Axis I diagnoses | 89 | 84 | 57 | 0.387 | 0.001 | 0.765 | 0.046 |
| Any Axis II diagnoses | 60 | 61 | 40 | 0.169 | 0.002 | 0.401 | 0.006 |
| Charges | | | | | | | |
| Public administration | 9 | 6 | 4 | 0.045 | 0.006 | 0.216 | 0.017 |
| Property | 23 | 30 | 32 | 0.077 | 0.006 | 0.187 | 0.091 |
| Weapons | 4 | 4 | 4 | 0.027 | 0.001 | 0.035 | 0.015 |
| Sex crimes | 10 | 5 | 5 | 0.047 | 0.006 | 0.212 | 0.006 |
| Drugs | 16 | 13 | 14 | 0.061 | 0.010 | 0.056 | 0.040 |
| Violence | 31 | 32 | 26 | 0.094 | 0.005 | 0.112 | 0.051 |
| Other | 3 | 3 | 2 | 0.023 | 0.005 | 0.021 | 0.022 |
| Unknown | 3 | 8 | 8 | 0.025 | 0.010 | 0.209 | 0.017 |
| Housing | | | | | | | |
| MOU 1 | 42 | 42 | 44 | 0.119 | 0.010 | 0.038 | 0.054 |
| MOU 2 | 39 | 42 | 31 | 0.055 | 0.008 | 0.183 | 0.079 |
| MOU 3 | 18 | 16 | 25 | 0.085 | 0.009 | 0.166 | 0.026 |

*Note.* $d_x$ = absolute standardized difference before propensity score matching; $d_{xm}$ = absolute standardized difference after propensity score matching; MOU = mental observation unit. Participants and nonparticipants were mental health patients in 3 programmed housing units of the New York City jail system; 2011 participants (treatment) and nonparticipants (comparison) were in the units from January 1 to June 30, 2011, and 2010 nonparticipants (comparison) from January 1 to June 30, 2010.

"top charge" (most serious charge levied against an inmate) among the 2011 cohort was violent crime, followed by property- and drug-related crimes. We observed a similar pattern among the 2010 comparison group, although property-related crime was most prevalent. As described in the Methods section, these observed differences between treatment and comparison groups became negligible after propensity score matching (Figure 1). Furthermore, it is important to note that this population included a larger proportion of non-Hispanic Blacks as well as higher rates of Axis I diagnoses than other study populations that are incarcerated and seriously mentally ill.[9,10]

Crude rates of experiencing mental health symptoms and displaying violent behaviors were lower among the 2011 treatment group than among the 2011 comparison group (Table 2). After we controlled for potential confounding by means of propensity score matching, these smaller rate ratios were not statistically significant, except for those for time spent on suicide watch units (rate ratio [RR] = 0.72; 95% confidence interval [CI] = 0.59, 0.89) and for recidivism (RR = 0.70; 95% CI = 0.59, 0.83) in the 2011 cohort. On the other hand, there was statistical evidence for the effect of the program on all outcomes when we compared the 2011 treatment group with the 2010 comparison group. We also looked at frequency of ambulance runs to the hospital for patients who experienced psychological distress or physical injury extreme enough to be untreatable in the urgent care clinics in jail, but there were no significant differences between any of the groups.

**TABLE 2—Outcomes by Treatment Status for Participants and Nonparticipants of "Beyond the Bridge" Mental Health Program: New York City Jail System, 2010–2011**

| Outcome | 2011 Treatment Group, No. of Cases (Rate)[a] | 2011 Comparison Group, No. of Cases (Rate)[a] | 2010 Comparison Group, No. of Cases (Rate)[a] | 2011 Treatment vs 2011 Comparison, ARR[b] (95% CI) | 2011 Treatment vs 2010 Comparison, ARR[b] (95% CI) |
|---|---|---|---|---|---|
| Self-injurious behaviors | 7 (0.40) | 17 (1.05) | 46 (1.48) | 0.87 (0.31, 2.46) | 0.45 (0.21, 0.99) |
| Use of force | 17 (0.97) | 18 (1.12) | 61 (1.97) | 0.84 (0.33, 2.14) | 0.44 (0.21, 0.91) |
| Guilty infractions | 42 (2.41) | 61 (3.79) | 201 (6.48) | 0.62 (0.38, 1.02) | 0.36 (0.23, 0.56) |
| Visits to suicide watch units | 41 (2.35) | 47 (2.92) | 330 (10.64) | 0.76 (0.45, 1.29) | 0.19 (0.16, 0.22) |
| Total days spent on suicide watch | 219 (12.56) | 297 (18.43) | 1197 (35.58) | 0.72 (0.59, 0.89) | 0.17 (0.16, 0.19) |
| Recidivism | 144 (542.75) | 320 (771.01) | 399 (696.61) | 0.70 (0.59, 0.83) | 0.58 (0.49, 0.69) |

*Note*. ARR = adjusted rate ratio; CI = confidence interval. Participants and nonparticipants were mental health patients in 3 programmed housing units of the New York City jail system; 2011 participants (treatment) and nonparticipants (comparison) were in the units from January 1 to June 30, 2011, and 2010 nonparticipants (comparison) from January 1 to June 30, 2010.
[a]Rate per 1000 person-days.
[b]Mantel–Haenszel rate ratio to account for stratification due to propensity score matching.

Table 3 shows that, when each level of program participation was compared with nonparticipation in 2010, a higher level of program participation led to decreased risk of being found guilty of an infraction. However, there was no clear evidence for a dose–response relationship between the level of program participation and risk of other outcomes in the pairwise comparison.

Linearity assumption in a dose–response relationship might not be tenable for outcomes except for infractions in the 2010 cohort; despite statistical significant dose–response estimates, we could not conclude that each level increase of the program participation was associated with decreased risk of mental health symptoms and violence outcomes.

## DISCUSSION

The Beyond the Bridge program had a dual focus. One part was to move treatment into the living areas of mentally ill inmates, to provide easy access to treatment, and to provide additional clinical support to immediately identify those inmates who were beginning to experience symptoms; the other was to provide

**TABLE 3—Adjusted Rate Ratios of Outcomes by Program Level and Dose–Response Effects for Participants (Compared With Nonparticipants) of "Beyond the Bridge" Mental Health Program: New York City Jail System, 2010–2011**

| Outcome | Level 1,[a] ARR (95% CI) | Level 2,[a] ARR (95% CI) | Level 3,[a] ARR (95% CI) | Level 4,[a] ARR (95% CI) | Dose–Response Effects,[b] ARR (95% CI) |
|---|---|---|---|---|---|
| Treatment group compared with 2011 comparison group | | | | | |
| Self-injurious behaviors | 1.33 (0.46, 3.88) | 0.62 (0.11, 3.50) | 0 | 0.21 (0.04, 1.27) | 0.62 (0.40, 0.98) |
| Use of force | 3.24 (1.19, 8.84) | 0.30 (0.05, 1.99) | 0.53 (0.12, 2.26) | 0.22 (0.04, 1.18) | 0.74 (0.53, 1.02) |
| Guilty infractions | 1.11 (0.61, 2.01) | 0.75 (0.34, 1.67) | 0.52 (0.22, 1.27) | 0.30 (0.12, 0.73) | 0.74 (0.62, 0.87) |
| Visits to suicide watch units | 0.32 (0.11, 0.94) | 1.75 (0.94, 3.27) | 0.73 (0.41, 1.31) | 0.38 (0.12, 1.16) | 0.81 (0.68, 0.95) |
| Total days spent on suicide watch | 0.22 (0.14, 0.35) | 2.34 (1.86, 2.91) | 0.27 (0.19, 0.40) | 0.25 (0.15, 0.41) | 0.72 (0.59, 0.87) |
| Recidivism | 0.55 (0.40, 0.76) | 0.84 (0.61, 1.17) | 0.61 (0.40, 0.93) | 0.74 (0.49, 1.11) | 0.89 (0.79, 1.00) |
| Treatment group compared with 2010 comparison group | | | | | |
| Self-injurious behaviors | 1.03 (0.22, 4.99) | 0.59 (0.23, 1.54) | 0 | 0.09 (0.003, 3.20) | 0.60 (0.39, 0.93) |
| Use of force | 0.88 (0.40, 1.94) | 0.25 (0.06, 1.13) | 0.16 (0.03, 0.88) | 0.19 (0.04, 0.90) | 0.64 (0.47, 0.86) |
| Guilty infractions | 0.67 (0.39, 1.15) | 0.39 (0.17, 0.86) | 0.28 (0.12, 0.65) | 0.18 (0.07, 0.44) | 0.64 (0.54, 0.76) |
| Visits to suicide watch units | 0.15 (0.05, 0.40) | 0.46 (0.29, 0.74) | 0.24 (0.12, 0.48) | 0.14 (0.06, 0.32) | 0.57 (0.49, 0.71) |
| Total days spent on suicide watch | 0.16 (0.10, 0.27) | 1.06 (0.88, 1.27) | 0.13 (0.08, 0.21) | 0.13 (0.09, 0.20) | 0.59 (0.49, 0.71) |
| Recidivism | 0.50 (0.36, 0.69) | 0.60 (0.41, 0.87) | 0.53 (0.34, 0.83) | 0.59 (0.39, 0.90) | 0.90 (0.79, 1.01) |

*Note*. ARR = adjusted rate ratio; CI = confidence interval. Participants and nonparticipants were mental health patients in 3 programmed housing units of the New York City jail system; 2011 participants (treatment) and nonparticipants (comparison) were in the units from January 1 to June 30, 2011, and 2010 nonparticipants (comparison) from January 1 to June 30, 2010.
[a]Level 1 = completing the first week-long program; level 2 = completing the second week-long program designed for participants who completed level 1; level 3 = completing the third week-long program designed for participants who completed level 2; level 4 = completing the fourth week-long program designed for participants who completed level 3.
[b]Estimated rate ratios were obtained from marginal structural modeling that adjusted for baseline differences across doses. These estimates were based on the assumption that there is a linear relationship between doses and rates of outcomes.

intensive, consistent, and plentiful evidence-based group therapy and skills-building sessions to support treatment readiness upon discharge. However, this study did not systematically capture or quantify outcomes related to treatment readiness after discharge, an area that should be addressed in future studies. We believe the implementation of the program created a group atmosphere where clinical staff and security officers worked as a team (however reluctantly at first) to maintain a high-quality clinical atmosphere, while simultaneously providing significantly easier access for any inmate who wanted to interact with clinicians without having to sign up, leave the housing area, or wait for what might be several hours in a clinic waiting room.

Improvements in symptoms (manifested in behavior) and in recidivism in the treatment group over the comparison groups provides evidence that the program is a promising approach for jail systems that are attempting to improve services without a significant additional budgetary impact. Transferring clinicians to housing areas offers them an opportunity to observe inmates over a longer period of time, and their interactions with inmates and security staff enable them to make better clinical judgments about medication compliance, discharge planning, and even diagnosis. We hypothesize that using evidence-based cognitive-behavioral therapy and motivational interviewing enhanced the skills of the clinicians and gave concrete behavior management tools to the inmates. The focus on treatment readiness, including medication management and attendance at group sessions, gave inmates a structure to their day, as did the incentive system, which offered minor but valuable tokens for ongoing good behavior. This structure reduced idle time that might otherwise have been filled with attempts to alleviate boredom, which is the genesis of many incidents that are considered infractions (e.g., talking back to an officer, provocative behavior, fights between inmates). In addition, these incentives were offered for good behavior over a period of time, which, for mentally ill individuals in jail, is evidence of their increased ability to maintain impulse control given the right atmosphere. Offering the right incentives, which had sufficient value to the inmates but were within jail regulations (and making sure they were delivered on time as promised), was a key to a successful token system. Many mentally ill inmates are suspicious of jail officials as well as clinicians in jail; delivering on a promise, however minor, was therefore a significant issue in building trust on the units.

Our clinical perspective is that engagement with care is the single most important element in promoting the mental health of our patients, along with the presence of steady security and health staff. The units described here have fostered improved patient engagement by providing patients with multiple modalities of treatment, thereby increasing the possibility that our clinical staff and the patients come together in meaningful clinical encounters.

## Limitations

We faced a wide range of limitations in the execution of this evaluation. Our use of propensity score matching represents an attempt to approximate randomization. Nonetheless, selection bias may still be present in our identification of the various cohorts. Because of this potential selection bias, we elected not to apply an intention-to-treat analysis in the two 2011 groups (treatment vs no treatment). Our clinical observation is that patients often spend the first week in the program with limited program time, being engaged in either medical or security-related activities.

The first limitation was that the daily census of who was housed in each of the study MOUs during the study period was disrupted with some frequency by correctional staff for nonclinical and non–court-related reasons; participants were moved out of the housing units without notice, and new patients were inappropriately moved into the housing units, despite having mental health diagnoses or security classifications that contraindicated their placement there. The second limitation was that provision of the incentives, which were so integral to the functionality of the program, was sometimes inconsistent, causing frustration among participants and their continued distrust of clinicians. The third limitation was that steady correctional officers in the MOUs were often not provided in the study housing areas. The presence or absence of steady officers was clearly identified by mental health providers as integral to the success of the program, but this variable was not recorded as part of the evaluation; however, it has been incorporated as a key metric in all subsequent mental health evaluations. The fourth major limitation we encountered concerned the reliability of data (e.g., the high proportion of "other" in ethnicity statistics indicates that there may have been confusion during data collection; the recording of uses of force is self-reported by Department of Correction staff and is thus subject to potential incentives for under- or overreporting, although the same warden and reporting policies were in place for the duration of this study and for all comparison groups). Finally, this study population is not generalizable to all jail populations, or even to all mentally ill jail populations.

## Conclusions

The lack of significant differences in outcomes between the participants and nonparticipants in the MOUs at the time of the Beyond the Bridge program is not a surprise; the treatment effect on nonparticipants of being cohoused with program participants was significant. Our clinical experience is that improved care for even a minority of patients in a housing area tends to reduce the potential for conflict for the entire population of that area. At any given time, an MOU of 50 seriously mentally ill patients may have 5 or 10 patients who are experiencing acute clinical or behavioral issues. Engaging just 2 or 3 of these patients in group activities allows both clinical and security staff to focus on avoiding adverse outcomes with the remaining patients. The one outcome that was significantly improved for this comparison, time spent on suicide watch units, also tracks with this assessment, since daily direct clinical observation of participants allows mental health professionals to focus on suicide avoidance for all residents of the MOU, not just those participating in the program.

The far more positive outcomes in the 2011 treatment group than in the 2010 comparison are compelling evidence that this type of program is beneficial to seriously mentally ill patients in jail. In addition, the improvement in clinical outcomes and the association between program participation and decreased risk of rule infractions are critically important for both clinical and security reasons. These infractions are often associated with uses of force by

security staff and can result in injury to patients and staff, as well as great financial expense to both the health and security systems.

Additionally, when we conducted a dose–response analysis among the participants, there was no linear relationship, except for in the frequency of being found guilty of an infraction. It is therefore safe to assume that the presence of the program on a group of mentally ill patients is far more meaningful for their safety, mental health, and postrelease survival in the community than is their level or duration of participation. Given the chance to widely implement this program for all mentally ill patients incarcerated within the New York City jail system, we would hope to experience a significant reduction of violence and mental health symptoms among our mentally ill patients.

Far more people in the US pass through jails than prisons each year.[11] The costs of such incarceration—to the health care and correctional systems as well as to society—are monumental. And despite the high prevalence of incarceration in this country, the provision of mental health services to this population remains marginalized within the larger US mental health system. The results of this study are promising in that they demonstrate a new alternative to the status quo in the jail system that leads to better outcomes for the patients and the communities into which they are eventually discharged. In addition to the need for improvements in jail-based mental health services, there is a significant need to address transitional care back to community settings for mentally ill patients in jail and prison. Finally, the challenges encountered in the implementation and support of this program in jail highlight the need for more resources and creativity to support diversion programs that can steer seriously mentally ill patients away from incarceration. ■

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## Contributors

S. Glowa-Kollisch drafted and revised the article and performed data analysis. S. Lim performed data analysis and figure preparation. C. Summers, L. Cohen, and D. Selling drafted the article. H. Venters drafted and revised the article and performed data analysis.

## Human Participant Protection

The institutional review board of the New York City Department of Health and Mental Hygiene determined that the program evaluation conducted herein was part of our regular quality assurance and improvement process, and was therefore not subject to a full protocol review.

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