

Intensity of Offending Following State Prison Release Among Persons Treated for Mental Health Problems While Incarcerated

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Objective: This study examined a range of demographic, clinical, and criminal history factors as they relate to the intensity of offending for up to two years postrelease.

Methods: This study drew on data from 1,438 individuals released from Massachusetts state prisons between 2007 and 2009 who, while incarcerated, received treatment from the prisons' mental health services and were followed for 24 months postrelease. These data were used to explore predictive factors related to the intensity of criminal justice involvement, defined as number of arrests in the two-year follow-up period.

Results: Predictors of subsequent arrests included number of previous incarcerations and black race. Protective factors included older age, supervision by parole, and a drug-related

or person-related governing offense on previous arrest. Clinical symptoms were not related to incidence of post-release arrests.

Conclusions: This study identified factors related to criminal history, such as type of charge, that were associated with the intensity of subsequent criminal justice involvement. These findings have not been reported in previous studies, perhaps because intensity of offending as opposed to a different dependent variable was used to measure criminal justice involvement. Further investigation should focus on whether the type of previous offense is related to postrelease risk factors for recidivism.

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By virtually every estimate, persons affected by mental illnesses are disproportionately arrested (1) and housed in prisons and jails (2,3). Even more are involved with some form of community corrections. Efforts to reduce these numbers have been implemented at virtually every intercept point in the sequence of criminal justice interventions (4), including prisoner reentry programs that are intended to smooth the transition from correctional settings to the community. The process of reentering the community following incarceration is a daunting task, arguably more difficult for persons affected by mental illness (5), and high rates of recidivism seem, therefore, to be inevitable.

Recidivism has long been a focus of criminal justice research (6). Longitudinal studies of repeat offending typically examine time from one arrest to another or from the end of incarceration to another arrest or incarceration. The outcomes of such studies are most commonly reported as “rates,” which represent the percentage of persons who are rearrested or reconvicted during a specific time period. This study took a somewhat different approach. Rather than study how long individuals remained arrest-free after release, we analyzed intensity of offending following release over a defined period. Specifically, we counted the number of arrests for

a new charge or technical violation during the two years following release from a Massachusetts state prison among individuals who were treated for a mental illness while incarcerated. We examined the association between intensity of offending and a range of demographic, clinical, and criminal history factors that the literature indicates may represent risk of offending.

BACKGROUND

Studies of recidivism among persons with mental illnesses have focused mainly on the effectiveness of various interventions designed to blend the uptake of mental health services with other aspects of adjustment. These studies have included evaluations of the Massachusetts Forensic Transition Team (7,8) and of the critical time intervention model (9). These programs are designed to link inmates who have mental health problems with mental health services upon release. Their design is based on the principle that there is a critical window of opportunity upon release in which to provide these services, after which the individuals are at risk of decompensation, homelessness, and, ultimately, in many cases, rearrest on a new charge or technical violation.

These programs emphasize the restoration or establishment of benefits, such as Medicaid, that may have been suspended during incarceration or to which the individual had never had access; linkages to mental health and other programming; social supports; medication maintenance; and rehabilitation services.

Other research has examined characteristics of individuals reentering communities from prisons to determine which demographic, clinical, and criminal justice history factors are most associated with recidivism and its timing (7,9,10). Criminal history factors, specifically a juvenile record and number of previous incarcerations, were the most significant predictors of shorter time between release and rearrest among inmates with a history of mental health treatment in the Massachusetts corrections system (10). Gender, race, diagnosis, or governing offense on the index incarceration did not affect time to rearrest. Peterson and colleagues (11) found this same pattern among risk factors for recidivism in a study in California.

The majority of studies involving reentry of persons affected by psychiatric illnesses focus on jail populations. That is not surprising, given the central role of jails as repositories of persons with serious mental illnesses (12), the diversion efforts that focus on jails, and the proximity of jails to local communities. However, state prisons are part of a system in which individual settings are designed to house inmates on the basis of their offenses and security risk and not on the basis of where they live, a factor that may complicate reentry planning. Persons who are sentenced to prison typically have been convicted of serious charges, including violent felonies. As a result, prison sentences are lengthy, on average four years (13). Individuals who are released from prison may face a community and social environment that has changed dramatically, a mental health system from which they have never received services, and families from whom they have been estranged.

Recidivism research routinely examines the time to a first rearrest, reconviction, or reincarceration. Less attention is paid to the frequency with which persons become involved with the justice system after their release, but this raises the question of whether persons who are rearrested once differ from those who are arrested multiple times over the same observation period. Given a two-year observation period, do clinical symptoms or substance use disorders become more important correlates of rearrest on a new charge or technical violation? Are criminal history factors equally as important in predicting number of rearrests as they are in predicting time to an initial rearrest? This article examines recidivism patterns in a way that addresses these questions.

METHODS

This study drew on data from a cohort of individuals released from Massachusetts state prisons between 2007 and 2009 who received treatment while incarcerated from prison mental health services for a clinical condition or took prescribed

psychiatric medications up to the time of their release (N=1,438). Individuals were followed for a period of 24 months or two years postrelease. Using these data, we addressed two research questions. First, what was the “intensity” of the individuals’ criminal justice involvement, with intensity defined as number of arrests during the two-year follow-up period? Second, what factors were predictive of the number of arrests during that period?

Data and Sample

This study used administrative data from multiple sources, including the Massachusetts Department of Correction (DOC) and the DOC’s Criminal Offender Record Information system (14). The sample included all individuals released from DOC facilities from 2007 through 2009 (N=1,438) who, while incarcerated, were given a diagnosis of a psychiatric disorder and were receiving treatment, in some cases psychotropic medications, for that disorder. Each individual in this cohort was followed for up to 24 months postrelease.

Human Subjects Review

This study focused on secondary data and was reviewed and approved by the institutional review boards at the University of Massachusetts at Boston and Worcester, the Massachusetts Department of Public Health, the DOC, and the Massachusetts Department of Mental Health. All principles in the Declaration of Helsinki were followed.

Dependent Variable

The dependent variable was the frequency with which individuals in the sample were rearrested within the two-year follow-up period postrelease.

Independent Variables

We focused on four groups of variables that we hypothesized would act as either risk or protective factors with respect to numbers of rearrests. These included demographic variables (gender, age, and race-ethnicity [black, white, or Hispanic] and education [less than or high school or above]), clinical factors (symptoms [thought, mood, or other disorder, including personality disorder] and history of a substance use disorder), criminal history (juvenile record, number of prior incarcerations, and governing offense for the sentence that was most recently served), and postrelease supervision (probation, parole, or none).

Hypothesized Effects

Clinical factors. We included symptoms as a predictor of intensity of criminal justice involvement. Symptoms were classified into three categories, including arguably the two most severe categories of mood disorders and thought disorders and a third category of other, less severe symptoms. Mood disorders included depression, bipolar disorder, and mania. Thought disorders included psychotic illnesses, such as schizophrenia spectrum disorders. Of course, not all disorders included in the mood disorders category—for example,

dysthymia—fit the definition of seriousness, but the difficulty of accurately and finely sorting the diagnoses included in the administrative data led us to use broader symptom-clustered categories that, admittedly, had the potential to include persons with less serious diagnoses. An additional clinical factor, history of a substance use disorder, was included because of its well-established relationship with criminal involvement and because substance abuse can complicate the management of psychiatric illnesses (9,15–17).

We should note that the information on disorders was obtained from intake assessments in inmate records; these assessments were completed by clinicians working in the DOC and reflect symptom presentation at the time of intake. No information was available about whether individual inmates' diagnoses might have changed over time, what role other factors such as substance abuse might have played in individuals' symptomatology, or any aspect of the assessment process itself.

Criminal history. It is well established that previous criminal involvement is predictive of future offending, even within populations of persons affected by psychiatric diagnoses (11,18). In this study, we included a juvenile arrest record and number of prior incarcerations (logged when included in the multivariable model because of excessive positive skewness) as risk factors for rearrest. We also included variables capturing the governing offense (most serious charge associated with the most recent conviction). Although a substantial number of offense categories were represented in the sample, the numbers of individuals convicted on some offenses, such as arson and sex offenses, were small. We thus used four categories of offenses—property crime (burglary, larceny, and arson), crimes against persons (including sexual assault, robbery, murder, and other violent offenses, all of which were represented in small numbers but together created a suitably large category), drug-related crimes (including possession and trafficking), and other crimes (including “crimes against public order” and a handful of other offenses not classifiable elsewhere). Our overall hypothesis was that persons were more likely to be rearrested if they had a juvenile record, if they had many—as opposed to fewer—prior incarcerations, and if they were sentenced for more serious offenses versus lesser charges, including public order offenses.

Postrelease supervision. Many individuals in this cohort were released under terms of probation or parole. We hypothesized that both types of supervision would be protective factors, compared with having no supervised status postrelease, potentially increasing compliance with mental health treatment or at least avoidance of substance abuse, thereby reducing the risk of rearrest.

Statistical Analysis

The dependent variable, number of arrests, ranged from zero to eight. Thus we used a count regression approach to

TABLE 1. Characteristics of 1,219 persons who received mental health treatment while incarcerated in state prison and who were followed for a 24-month period after being released^a

Variable	N	%
Dependent		
Arrests over a 24-month period		
0	658	54
1	219	18
2	148	12
3	73	6
4	49	4
5	24	2
6	24	2
7	12	1
8	12	1
Independent		
Demographic characteristics		
Male	744	61
Race-ethnicity		
White	805	66
Black	195	16
Hispanic	219	18
Age	37±10	
Education (less than high school)	439	36
Clinical factors		
Symptoms		
Thought	61	5
Mood	439	36
Other	707	58
Substance use disorder	634	52
Governing offense on index incarceration		
Person	390	32
Property	244	20
Drug	366	30
Other	329	27
Postrelease supervision		
Parole	256	21
Probation	320	26
None	646	53
Criminal history		
Juvenile record	585	48
Total previous incarcerations	6±6	

^a A subset of the original sample of 1,438 inmates was lost through listwise deletion. Comparison of the characteristics of this subset with the total sample suggests that the subset did not differ substantially or in important ways from the original.

model this variable. Examination of the distribution found that the variable was significantly “overdispersed,” meaning that the variance was significantly larger than the mean, suggesting that using a Poisson regression model would be inappropriate and that a negative binomial regression (NBR) model should be employed instead (18). As noted below, 54% of the sample was never rearrested, and thus the distribution was “zero inflated” (included an overabundance of zeros). Although a zero-inflated negative binomial model would be more “statistically correct,” interpretation of the “inflation” portion of the model is difficult, especially because we did not hypothesize finding a systematic process that generated excessive zeros. Thus the count regression approach is considered quite adequate in these situations (19).

TABLE 2. Negative binomial regression model of factors associated with multiple arrests over a two-year period among 1,261 inmates who received mental health treatment before their release^a

Factor	IRR ^b	Robust SE	Z	p> Z	95% CI
Demographic factor					
Male	1.162	.116	1.500	.134	.955–1.413
Age	.966	.005	–6.410	.000	.956–.977
Race-ethnicity					
Black	1.394	.153	3.040	.002	1.125–1.728
Hispanic	1.048	.126	.390	.699	.827–1.327
White	1.000				
Less than high school education	1.037	.091	.420	.676	.874–1.230
Clinical factors					
Symptoms					
Mood	1.009	.086	.100	.919	.853–1.193
Thought	.807	.175	–.990	.324	.527–1.235
Other	1.000				
Substance use disorder	.963	.087	–.420	.678	.806–1.151
Governing offense on index incarceration					
Drug-related	.664	.096	–2.830	.005	.499–.882
Person-related	.751	.104	–2.030	.042	.571–.990
Property-related	.786	.115	–1.640	.101	.589–1.048
Other	1.000				
Criminal history factors					
Juvenile record	1.067	.098	.710	.476	.892–1.278
Total incarcerations (logged)	1.545	.078	8.600	.000	1.399–1.707
Postrelease supervision					
Parole	.798	.088	–2.040	.041	.642–.991
Probation	.824	.082	–1.930	.053	.677–1.003
Constant	2.395	.575	3.630	.000	1.495–3.835
(LN) alpha ^c	.229	.086			.060–.399
Alpha*	1.258	.108			1.062–1.490

^a A subset of the original sample of 1,438 inmates was lost through listwise deletion. Model fit: Wald $\chi^2=157.89$, $df=15$; log pseudolikelihood $\chi^2=-1,784.0926$, $df=2$; $p<.001$

^b Incident rate ratio

^c LN, natural logarithm

* $p<.001$, indicating that the negative binomial regression model was an improvement over a Poisson regression

RESULTS

Sample Characteristics

Characteristics of the sample are shown in Table 1. The cohort was predominantly male and white. Crimes against persons was the modal charge category for the index incarceration. Thought disorders were relatively rare, but mood disorders were relatively common. Perhaps not surprisingly, the group as a whole had a substantial number of criminal history features. Nearly half of the inmates had juvenile records, and most ($N=1,107$, 77%) had at least one previous incarceration, with a maximum of 29. Almost half were released on parole or probation, although information about length of supervision was not available. Roughly half of the sample remained arrest-free during the two-year follow-up, but some displayed considerable intensity of reoffending, with a maximum of eight arrests over the 24 months of observation. In all, roughly 46% ($N=561$) were reincarcerated during that period.

Multivariate Analysis

Results for the NBR model are shown in Table 2. The p value for the log-likelihood chi square (asymptotically equivalent to the Wald chi square) indicates that the model itself was

a statistically significant improvement over a model that used just the constant and set all coefficients to zero; the significant alpha coefficient indicates that the negative binomial model was a better fit for the data compared with the Poisson model. Results of the NBR model are shown in terms of incident rate ratios ($\exp \beta$), which compare the likelihood of an event across the levels of a given predictor.

Protective factors included older age and postrelease supervision involving parole (but, interestingly, not probation). Persons on probation were roughly 21% more likely to experience multiple arrests compared with parolees. Certain offense categories were also associated with negative risk of multiple arrests, including drug-related offenses and crimes against persons. Positive risk factors included black race and a logged value of previous incarcerations prior to most recent correctional release. Having a juvenile record was not associated with greater risk of multiple arrests.

arrests.

DISCUSSION

In some ways, the findings of this analysis are similar to those of other studies of justice involvement among persons with mental illness. Criminal history factors appeared associated with greater risk of further criminal involvement, and factors typically associated with justice involvement, including race and history of criminal justice involvement. Also consistent with previous studies, clinical factors, including a history of substance use disorder, did not affect the number of arrests over the two-year period. But perhaps because we used a different sample—persons released from state prisons—and a different measure of recidivism—frequency of arrest, as opposed to the more common measure of simply experiencing a rearrest—we have obtained a slightly different pattern of findings.

As mentioned above, it appears that our findings do not support our hypotheses that having a more serious index offense and a juvenile record would result in more frequent rearrests. Rather, person-related offenses, which by definition

are serious, and drug-related offenses were associated with lesser risk of rearrest. Although outside the scope of this analysis, we conjecture that longer sentences, which would be associated with crimes against persons and also with some drug offenses, may be a deterrent to renewed offending. However, the most common governing offenses for rearrest of individuals who had up to eight rearrests were property offenses followed by person-related offenses and drug-related offenses, suggesting that perpetrators of person- and drug-related offenses remained in the analysis pool. Similarly, although a juvenile record is often found to be a significant risk factor for criminal justice involvement and subsequent incarceration, it was not found to be associated with intensity of criminal justice involvement in this study. Our data do not allow us to explain why that might be the case, but again we might conjecture that because many individuals exit prison at a relatively advanced age (25% were between 43 and 75 years old), the experience of prison itself or other, more recent factors may have greater effects on the risks of continued justice involvement.

Parole was a strong protective factor against multiple rearrests, although probation was not. This finding is intriguing, given research that found community corrections, such as parole or probation, to be relatively ineffective for persons with mental illness and that supports the development of specialty probation (20). Again, the population of this study consisted of inmates at a state prison, not all of whom had a serious mental illness. Many of these individuals could likely benefit from the added structure of parole, given their lengthy sentences, which may complicate a more difficult transition back to the community.

We must also identify the limitations imposed by the use of administrative data sets. One limitation had to do with the outcomes of arraignments. In “count models” such as the one developed here, it is typical to identify an exposure variable that takes into account the length of time that individuals are at risk. Here we assumed that all persons had a full two years of exposure during which they could be arrested. That is unrealistic, of course, because some individuals were incarcerated and not at risk during that time, but how this circumstance affected our analyses cannot be determined beyond what we described above related to criminal charges. Furthermore, we lacked data specificity on clinical diagnoses, criminal charges associated with rearrest, and any mental health services utilization post-release. Future research should include specific data about these variables as well as about the effects of housing and the length of sentences and—potentially—a comparison cohort of offenders who were not receiving mental health services in prison.

Such limitations aside, these data offer the capability to examine the experiences of large numbers of individuals at minimal cost. Analyses of such data can identify important trends and relationships, but fully understanding those trends requires more finely grained investigation of the lives

of individuals in these important populations if we are to learn what might really reduce their risk of reoffending.

CONCLUSIONS

Similar to the findings of other studies of justice involvement among persons with mental illness, this analysis found that the frequency of rearrest among inmates at a state prison was related to criminal history and other factors typically associated with justice involvement, including race. However, these findings also differed from previous studies in potentially important ways with respect to the observed effects of certain types of offenses, including person-related and drug-related offenses. Why these should be protective against arrest is unknown, but that relationship certainly could serve as a focus for future research.

Although administrative data such as those used in this study can identify significant trends in important phenomena such as recidivism, these findings should not be viewed as final. They rather suggest where more finely-grained research efforts should be focused to understand offending among persons with mental health issues. We conclude that perhaps specialized programming for this population is a lesser concern than addressing larger policy issues related to the criminal justice system and the continued examination of postrelease supervision for this important population.

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First-Person Accounts Invited for Column

Patients, family members, and mental health professionals are invited to submit first-person accounts of experiences with mental illness and treatment for the Personal Accounts column in *Psychiatric Services*. Maximum length is 1,600 words.

Material to be considered for publication should be sent to the column editor, Jeffrey L. Geller, M.D., M.P.H., at the Department of Psychiatry, University of Massachusetts Medical School (e-mail: jeffrey.geller@umassmed.edu). Authors may publish under a pseudonym if they wish.