Criminal Recidivism in Inmates with Mental Illness and Substance Use Disorders

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The relative contributions of mental illness and substance use disorders to criminal recidivism have important clinical and policy implications. This study reviewed 36 months of postrelease data for nearly 10,000 New Jersey state inmates released in 2013 to ascertain the rearrest rate of those diagnosed with mental illness, substance use disorders, both, or neither. We also examined whether certain characteristics suggestive of higher risk of psychiatric decompensation were associated with higher rates of rearrest. Released inmates who were diagnosed with a substance use disorder (without a mental illness) while incarcerated had the highest rate of rearrest upon release, followed by inmates diagnosed with both mental illness and substance use disorder together, inmates with neither a substance use disorder nor a mental illness, and lastly by inmates diagnosed with mental illness alone. These differences were statistically significant only between inmates with substance use disorders and those without a substance use disorder. Among those with a diagnosed mental disorder, there were no statistically significant differences in recidivism based on diagnosis or based on prescription of antipsychotic medication, injectable antipsychotic medication, or involuntary antipsychotic medication. These results support correctional institutions assertively addressing substance use disorders, especially for individuals returning to the community.

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Approximately 2.2 million people, or nearly 1 percent of the United States population, were incarcerated in jails or prisons at the end of 2016.[1] The vast majority of these individuals, nearly 97 percent, are expected to eventually return to the community.[2] More than two thirds (68%) of persons released from prison will be rearrested within the first three years of release, and 83 percent will be returned to the criminal justice system within nine years of release.[3] The societal and financial costs of incarceration and recidivism are burdensome.[4] Thus, measuring and reducing recidivism is a high priority for most departments of corrections.[5]

Research indicates that former inmates with mental illness recidivate at a rate similar to undifferentiated offenders, though inmates with substance use disorders recidivate at a higher rate than undifferentiated offenders. Inmates with both mental illness and substance use disorder recidivate at an even higher rate.[6–14] Additionally, persons with serious mental illness, such as schizophrenia and bipolar disorder, tend to have higher recidivism rates than those with other psychiatric disorders.[6,11,15] The matter is complex, however, because other criminogenic factors, such as hostility, impulsivity, and antisocial attitudes and peers, may better account for crime among both those with and without mental illness diagnoses.[16–18] Moreover, the effort to disentangle mental illness, substance abuse, and other crimino-

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genic factors in the relationship to crime is nothing new. Most famously, the MacArthur Violence Risk Assessment Study, conducted between 1992 and 1995, explored the relationship between mental illness and violence, and the implications of that study continued to be debated for years after the conclusion of the study.[19]

Evidence suggests that better engagement in treatment for persons with mental illness on reentry does reduce the risk of committing a serious crime. Participation in mental health court reduces the risk of violent offending for justice-involved individuals with mental illness.[20] Mela and Depiang reported that clozapine delayed the time to reoffending for former inmates prescribed an antipsychotic medication.[21] More broadly, routine outpatient treatment, including medication, reduces the likelihood of arrest among persons with severe mental illness.[22]

Notwithstanding the study by Mela and Depiang,[21] little research has been done to consider the effects on recidivism of being prescribed an antipsychotic medication in prison, being prescribed injectable antipsychotic medication, or being prescribed medication involuntarily during incarceration. In the Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE), nearly 75 percent of the patients discontinued their medications during the 18 months of the study.[23–24] CATIE confirmed what psychiatrists already knew: that nonadherence with antipsychotic medication is the norm rather than the exception. In turn, such disengagement from treatment may contribute to incarceration among those diagnosed with severe mental illness.[25] Supporting this concern, a prospective study from the United Kingdom reported a higher rate of violence in released prisoners with untreated schizophrenia.[26] There is no reason to suspect that offenders with mental illness prescribed antipsychotic medication are any more likely to take their medication upon release than other individuals with mental illness in the community. Thus, the prescription of antipsychotic medication itself in prison may predict criminal recidivism.

Research suggests that long-acting injectable antipsychotic medications reduce nonadherence and hospital recidivism.[27] In our experience, however, an inmate patient for whom long-acting injectable or involuntary antipsychotic medications are prescribed may represent an even greater risk of crime upon release than those for whom voluntary oral antipsychotic medications are prescribed in prison. In the New Jersey Department of Corrections (NJDOC), patients are usually prescribed long-acting injectable antipsychotic medication due to histories of nonadherence with oral medication, and these patients also often have histories of dangerousness associated with mental illness. Furthermore, inmate patients prone to nonadherence are often prescribed the medication involuntarily (on a long-term, non-emergency basis). Thus, we suspected that upon leaving prison, patients who had been prescribed injectable or involuntary treatment would stop taking their medications in the community, become symptomatic, and pose an increased risk for criminal recidivism.

In this study, consistent with the scientific literature, we hypothesized that the three-year recidivism rate of offenders with a mental illness, but not a substance use disorder, would be similar to the rate of offenders with neither problem; that the three-year recidivism rate of offenders with a substance use disorder would be higher than the rates of offenders without a substance use disorder, and of those with a mental illness alone; and that the three-year recidivism rate of offenders with both a mental illness and a substance use disorder would be higher than any of the other three groups. Among the group of offenders diagnosed with mental disorders, we hypothesized that, relative to other offenders with an identified mental illness, three-year recidivism rates would be higher among those with a psychotic disorder or a mood disorder diagnosis, those prescribed an antipsychotic medication upon release, those prescribed a long-acting injectable antipsychotic medication upon release, and those prescribed involuntary medication upon release.

Methods

This study is a retrospective review of medical and legal records of all 9,669 inmates released from the NJDOC in 2013. The study was approved by the Rutgers University Robert Wood Johnson Medical School Institutional Review Board and by the NJDOC's Departmental Research Review Board. Informed consent was waived, given the minimal risk of the study and because the research required no direct contact with subjects.

Characteristics of the study population are described in Table 1. The sample was composed mainly of males (83.0%), with an average age at release of 35 years, and the most common reported racial eth-

Table 1 Full Sample Descriptives

Variables	Frequency (%)
Gender, *n* (%)	
Male	8,992 (93.0)
Female	677 (7.0)
Race/ethnicity, *n* (%)	
White	2,727 (28.5)
Black	5,407 (56.5)
Hispanic	1,394 (14.6)
Other	45 (0.5)
Marital status, *n* (%)	
Single	6,066 (83.0)
Married	608 (8.3)
Divorced	367 (5.0)
Separated	225 (3.1)
Widowed	45 (0.6)
Education level, *n* (%)	
Some schooling, not a HS graduate	2,420 (26.4)
HS graduate/equivalent	5,870 (64.1)
Some college and beyond	869 (9.5)
Prior arrests, mean (SD)	7.4 (7.3)
Prior convictions, mean (SD)	4.4 (4.7)
Prior DOC admissions, mean (SD)	1.1 (1.3)
Prior DOC history, n (%)	
No prior admissions	4,573 (47.3)
1 prior admission	2,314 (23.9)
2 prior admissions	1,370 (14.2)
3 prior admissions	801 (8.3)
4+ prior admissions	611 (6.3)
Index incarceration offense, *n* (%)	
Violent	2,149 (22.4)
Weapons	903 (9.4)
Property	1,497 (15.6)
Drugs	2,466 (25.6)
Community supervision violation	1,985 (20.6)
Other	615 (6.4)
Release age, mean (SD)	35.1 (10.4)
Time served (days), mean (SD)	841.8 (1082.2)

N = 9,669 subjects.
DOC, Department of Corrections.

Table 2 Substance Use and Mental Health Characteristics of Sample on Release

Diagnosis	Frequency (%)
MHSNR	1,175 (12.2)
Substance use disorder, Total	4,005 (41.4)
Substance use disorder and MHSNR	1,020 (10.6)
Substance use disorder, no MHSNR	2,985 (30.9)
No substance use disorder, Total	5,664 (58.6)
No substance use disorder and MHSNR	155 (1.6)
No substance use disorder, no MHSNR	5,509 (57.0)
Diagnosed with mood disorder	997 (10.3)
Diagnosed with psychotic disorder	259 (2.7)
Prescribed antipsychotic medication	244 (2.5)
Prescribed injectable medication	36 (0.4)
Approved for involuntary medication	32 (0.3)

Data are presented as *n* (%). *N* = 9,669 subjects.
MHSNR, Mental Health Special Needs Roster.

nicity was black (56.5%). The majority of the subjects were single (83.0%), with a high school or equivalency degree (64.1%). Although individuals demonstrated lengthy prior criminal histories, this was the first prison sentence for almost 50 percent of the sample. The most common reason for conviction was a drug offense (25%), and individuals had served an average of more than two years in prison.

The NJDOC, via its health care vendor Rutgers University Behavioral Health Care – University Correctional Health Care (UCHC), uses an electronic medical record to document treatment within the prison system. This electronic medical record includes databases that maintain searchable information about medications, diagnoses, and whether an inmate is designated as being on the Mental Health Special Needs Roster (MHSNR), which identifies inmates with mental illness of enough severity that it impairs their ability to function in prison, thus requiring treatment. These inmates have a range of mental illnesses, including schizophrenia, adjustment disorder, personality disorders, and any combination thereof. As shown in Table 2, 12 percent of released prisoners were on the MHSNR at the time of their release. A substance use disorder had been diagnosed in 87 percent (1,020 of 1,175) of the inmates on the MHSNR. In contrast, only 35 percent (2,985 of 8,484) of inmates not on the MHSNR had been given a diagnosis of a substance use disorder, while 57 percent (5,509 of 9,669) of the sample had no indication of a substance-related problem and were not on the MHSNR.

We identified two principal independent variables: substance use disorder and mental illness. The former consisted of any inmate with any substance use disorder diagnosis in the electronic medical record upon release; the latter consisted of any inmate on the MHSNR upon release. To further analyze our hypotheses regarding factors related to mental illness, we identified groups on the MHSNR with a psychotic disorder (chiefly schizophrenia and schizoaffective disorder) or a mood disorder (chiefly bipolar disorder, major depressive disorder, and other depressive disorders). We next identified groups of inmates with a prescription for antipsychotic medication upon release, a prescription of long-acting injectable antipsychotic medication upon release, and an approval for involuntary medication at the time of release. For each respective comparison, the relevant group was subtracted from the group diagnosed with mental illness to allow for fair contrast-

Table 3 Rearrest by Diagnosis

Diagnosis	Rearrest, %	Number of Rearrests, Mean (SD)
Substance abuse indication and placement on MHSNR	55.20	1.47 (2.09)
Substance abuse indication no MHSNR	58.46	1.52 (2.08)
Substance abuse total	56.83	1.50 (2.09)
No substance abuse indication and no MHSNR	48.72	1.13 (1.77)
MHSNR and no substance abuse indication	42.58	0.92 (1.48)
No substance abuse total	45.05	1.00 (1.62)
Prescription of antipsychotic meds upon release	50.41	1.39 (2.28)
Prescription of injectable antipsychotic meds upon release	44.44	1.58 (2.43)
Receiving involuntary medication in prison upon release	46.88	1.19 (1.58)
Psychotic disorder	48.65	1.29 (2.18)
Mood disorder	55.47	1.43 (1.88)

MHSNR, Mental Health Special Needs Roster.

ing. As an example, when comparing those with a psychotic disorder to all others identified with mental illness, those with psychosis were subtracted from the mental illness group. These combinations and the resulting sample sizes can be seen in Table 2.

The State Bureau Identification number was used to electronically retrieve information for criminal events that occurred within New Jersey subsequent to release of the 2013 cohort. The NJDOC provides data on rearrest, reconviction, and reincarceration; we selected rearrest as the primary measure for recidivism. Violations of parole or other forms of supervision (e.g., Intensive Supervision Program) were included as rearrests.

Following linkage with recidivism data, sensitive health care information was deidentified prior to analysis. Individuals excluded from this study were the very few offenders without a State Bureau Identification number, offenders who were deceased, and offenders who were released to other agencies (e.g., released to a law enforcement agency in another state or released to a federal law enforcement agency). Together these individuals totaled 179 cases subtracted from the sample.

The study cohort was tracked on recidivism measures for 1,095 days postrelease. This three-year time period allowed a reasonable period for follow-up, as well as a standard period for dispositions of criminal cases to be cleared and recorded. If an individual was released and was rearrested multiple times during the follow-up timeframe, each of these events was counted as an independent occurrence. If an individual was processed and released back to the community, this allowed an opportunity for the individual to recidivate during the 1,095 days, and each of these rearrests would be counted. After the recidivism period elapsed, no further recidivism was tracked. This methodology allowed us to track both whether there was any arrest, as well as the average number of rearrests.

Statistical analysis was performed using independent sample *t* tests, analysis of variance, and chi-square (for a two-by-two contingency table). Tukey's range test was used to analyze statistical significance when multiple comparisons were required. All alpha levels were set *a priori* at .05.

Results

The rearrest, reconviction, and reincarceration rates for the full sample were 52.3 percent, 38.2 percent, and 29.8 percent, respectively. The average number of rearrests for the full sample was 1.29, while the average numbers of reconvictions and reincarcerations were less than 1. As shown in Table 3, there was no statistical difference between the mean numbers of rearrests for those released inmates diagnosed with mental illness but no substance use disorder (42.58%, $\bar{x} = .92$, SD = 1.48, $n = 155$), and those who had neither diagnosis (48.72%, $\bar{x} = 1.13$, SD = 1.77, $n = 5{,}509$).

As seen in Tables 3 and 4, individuals with a substance use disorder had statistically higher rearrest means ($\bar{x} = 1.50$, SD = 2.09) than both those with no substance use disorder ($\bar{x} = 1.00$, SD = 1.62) or mental illness alone ($\bar{x} = .92$, SD = 1.48; F = 32.30, $df = 2$, $P < .001$). Although individuals with substance use disorders consistently had a higher likelihood of rearrest one or more times within the 36-month follow-up period, this was only statistically significant compared to those with mental illness alone and those who had substance use disorders alone (F = 27.14, $df = 3$, $P < .001$).

Table 4 Display of Statistical Differences

Reference Category	Comparison Group	Statistical Results
Substance Use Disorder Total (n = 4,005) $\bar{x}$ = 1.50, SD = 2.09	No Substance Use Disorder (n = 5,664) $\bar{x}$ = 1.00, SD = 1.62 Mental Illness Alone (n = 155) $\bar{x}$ = 0.92, SD = 1.48	F = 32.30 df = 2 $P < .001$
Mental Illness and Substance Use Disorder (n = 1,020) $\bar{x}$ = 1.47, SD = 2.09	Substance Use Disorder Total (n = 4,005) $\bar{x}$ = 1.50, SD = 2.09 No Substance Use Disorder and No Mental Illness (n = 5,509) $\bar{x}$ = 1.13, SD = 1.77 Mental Illness Alone (n = 155) $\bar{x}$ = 0.92, SD = 1.48	F = 27.14 df = 3 $P < .001$

Offenders with both a mental illness and a substance use disorder ($\bar{x}$ = 1.47, SD = 2.09) had higher average numbers of rearrests than those with neither a substance use disorder nor a mental illness ($\bar{x}$ = 1.13, SD = 1.77) and those with mental illness alone ($\bar{x}$ = .92, SD = 1.48), but these differences were not statistically significant. Among those with substance use disorders, those who also had mental illness did not have a statistically significant difference in their average number of rearrests compared with those with a substance use disorder but no mental illness ($\bar{x}$ = 1.50, SD = 2.09).

Among individuals on the MHSNR, there were no statistically significant differences in the rate of recidivism based on diagnosis of a psychotic disorder, diagnosis of a mood disorder, prescription of antipsychotic medication, prescription of long-acting injectable antipsychotic medication, or placement on involuntary antipsychotic medication. Those with mood disorders ($\bar{x}$ = 1.43, SD = 1.88) and those receiving injectable medications ($\bar{x}$ = 1.58, SD = 2.43) had higher mean numbers of rearrests, although these differences also did not reach statistical significance.

Discussion

The incarceration rate in the United States is the highest in the world.[28] Although this rate has declined since 2009,[29] and a few states have substantially reduced the number of persons incarcerated,[30] the total number of incarcerated persons across the country remains steady at about 2.1 million people.[29] The reasons for this high incarceration rate are many and widely debated, and they are mostly beyond the reach of health care.[31] The investigators in this study, three of whom work within a correctional health care system, sought to determine whether criminal recidivism rates were higher among released inmates with mental illness, substance abuse, or both to identify a potential need to target any group with a higher risk of recidivism.

The results of this study support our first two hypotheses. Released inmates diagnosed with mental illness who do not abuse substances were at no greater risk of recidivism than inmates who had neither of these problems. On the other hand, offenders with a substance use disorder were at higher risk of recidivism than offenders without a substance use disorder, independent of whether these individuals had a mental illness.

Our third hypothesis, i.e., that recidivism would be highest among mentally ill inmates with co-occurring substance use disorder, was not supported by our data. Released inmates who had both a mental illness and a substance use disorder exhibited higher recidivism than those with no substance use or mental illness and those with mental illness alone, but did not demonstrate a higher recidivism rate when we controlled for a co-morbid substance use disorder.

Finally, our data did not support our prediction that clinical factors previously identified by the literature as risk factors for nonadherence increased recidivism. None of the following factors seemed to make a difference in terms of rearrest: a psychotic disorder diagnosis, a mood disorder diagnosis, being prescribed an antipsychotic medication upon release, being prescribed a long-acting injectable antipsychotic medication upon release, and being prescribed involuntary medication at the time of release. The overarching conclusion of this study is that substance use disorder, whether alone or in the presence of mental illness, is associated with higher recidivism among released inmates, at least within the first three years after release. Mental illness, on the other hand,

was not by itself associated with higher recidivism. Furthermore, various clinical characteristics of mental illness were also not associated with higher recidivism.

There are some limitations related to this study. Our finding refuting mental illness as an independent risk factor for recidivism must be qualified by the observation that most inmates who had a diagnosis of mental disorders in our sample also had a diagnosis of substance use disorders. The proportion of inmates with substance use disorders was smaller among inmates without a mental illness. The increased prevalence of substance use disorders among individuals with mental illness in this study replicates the findings of the Bureau of Justice[32] as well as the abovementioned MacArthur study.[19]

We opted to use rearrest, rather than reconviction or reincarceration, as our primary measure of recidivism. While there is a risk that an arrest may not reflect the commission of an actual crime, rearrest does not count the full extent of offender recidivism because many crimes go unreported to police or, if reported, do not result in an arrest.[33] Thus, we determined that reconviction and reincarceration would reflect criminal activity less accurately.

Diagnoses in this naturalistic study were made by clinicians rather than by researchers with structured interviews. Given that only 35 percent of released inmates not on the MHSNR carried substance use disorder diagnoses, when a national survey of substance abuse among prisoners showed a prevalence of more than 50 percent for substance use disorders,[34] our study may undercount the prevalence of substance use disorders among New Jersey's released prisoners, especially inmates not on the MHSNR. In 2016, in a deliberate effort to improve its assessment and treatment of substance use disorder, UCHC began using a structured assessment of substance use disorders (Texas Christian University Drug Screen V) on all inmates at intake. Until that time, it may have been true that only inmates on the MHSNR received sufficient attention to fully assess for substance use disorders. Given this study's principal finding that substance use is associated with criminal recidivism, an undercounting of substance use disorders would underestimate the strength of this association, narrowing the gap between the recidivism of those with substance use disorders and those without. This speculation presumes, however, that the additional group of people identifiable by the new screening instrument would have had no relevant distinctions from the group of people identified by clinical diagnosis alone. This is an empiric question, one that cannot be settled without the data.

We did not differentiate among the various substance use disorders and their associated recidivism. Such stratification might not have been useful because organizational continuous quality-improvement data related to frequency of substance use disorder diagnoses in the NJDOC revealed that many inmates with substance use disorders had problems with more than one substance. The Bureau of Justice study by Mumola and Karberg[34] on substance use disorders among prisoners similarly revealed the commonness of multiple substances of abuse.

Aside from substance use disorders and mental illness, the groups may have differed in terms of other factors predictive of crime, including age, gender, criminal history, and gang membership. This limits the extent to which we can conclude that substance-related problems alone account for the observed differences in recidivism rates.

Despite these limitations, the results support the efforts of the NJDOC and the UCHC to aggressively address substance use disorders in prisoners. For example, the NJDOC offers a licensed, residential, substance use disorder treatment program for its inmates as well as less intensive substance use disorder "outpatient" programs at all facilities. UCHC provides comprehensive medication-assisted treatment for substance use disorders, both during incarceration and in anticipation of release. A New Jersey grant program provides peer navigator services for releasing inmates with opioid use disorder who choose to participate in the service. We look forward to assessing and reporting whether our efforts in this area are associated with reduced recidivism.

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