Criminal Recidivism in Mentally Ill Offenders: A Pilot Study

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Criminal recidivism in mentally ill offenders, in the context of a county jail, has not been extensively studied. This study compares the rate of criminal recidivism between those who suffered from a mental illness at the time of arrest and those who did not. In addition, the length of incarceration between these two groups was compared. Using survival analysis, a risk assessment model describing the key features involved in criminal recidivism among the mentally ill may be built. To our knowledge, this study is the first of its kind and will suggest areas of intervention that could prevent criminal recidivism among mentally ill offenders. Due to the lack of literature on the subject, this pilot study provides estimates of key parameters, such as types of crimes and frequency of incarceration, needed to undertake a definitive study. Furthermore, the pilot study provides an opportunity to develop and field test a data abstraction form and computer matching methods.

How does the rate of misdemeanant and felony recidivism for mentally ill offenders compare to that of non-mentally ill offenders? If the arrest crimes for the two groups are the same, are mentally ill offenders incarcerated for a longer time? Is it possible to predict which mentally ill inmates are more prone to recidivism on the basis of such factors as diagnosis, compliance with community treatment, and domicility? For schizophrenic offenders, does the route of medication administration in the community (oral versus intramuscular) affect the rate of criminal recidivism?

Using a matched retrospective cohort study design, research may begin to answer these questions. However, due to the lack of literature on this subject, this pilot study was performed. The pilot study served to develop and test the data abstraction instrument; develop and test methods for matching; ascertain data availability and time required for data collection for each subject; and estimate the key parameters that influence the size of a more definitive study.

Due to the size of this pilot study, it was unlikely from the outset that statistically significant answers to the (main) study aims would be achieved. However, the aims of the larger study were as follows: (1) to determine whether there is a difference in the length of incarceration between criminals who are mentally ill and those who are not mentally ill; (2) to determine whether there is a difference in

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the rate of criminal recidivism between those who are mentally ill and those who are not mentally ill; (3) to attempt to build a risk assessment model that will predict the key features of mentally ill offenders who are criminal recidivists (it is likely that this will include the presence of a psychotic disorder, noncompliance with community psychiatric care, and the presence of substance abuse); and (4) to determine whether there is a difference in the rate of recidivism among the mentally ill offenders who receive depot neuroleptics in the community compared with the mentally ill offenders who receive oral neuroleptics.

Medical and criminal records of detainees housed on the psychiatric unit at the King County Correctional Facility (KCCF; Seattle, WA) were reviewed. These were compared with the records of detainees housed in the general population.

Background

The United States incarcerates more people per capita than any other developed country in the world.[1] In prisons, the absolute number of incarcerated individuals has increased from 500,000 (150/100,000) in the mid-1980s to over 1,000,000 people (300/100,000) in 1992.[2] The point prevalence for incarcerated adults across the United States is 9,000,000 people.[3] In addition to the dramatic increase in the absolute number of criminal offenders, there has been a sharp increase in the number of incarcerated mentally ill offenders.[1,4]

Several factors increase the likelihood that an individual's unusual behavior will be dealt with by the criminal justice system rather than the mental health system. These include: deinstitutionalization policies that result in the unavailability of long-term hospitalization for the chronically mentally ill; lack of adequate support systems for the mentally ill in the community; formal and rigid criteria for civil commitment; and community expectations that the police deal with deviant behavior more quickly and efficiently than does the mental health system.[1] Furthermore, on release from correctional facilities, mentally ill offenders do not have equal access in the community to treatment, employment, housing, and social services.[1,4,5] These factors may culminate in an increased rate of criminal recidivism for mentally ill offenders compared with non-mentally ill offenders.

Most studies concerning criminal recidivism among mentally ill offenders have focused on those found not guilty by reason of insanity (NGRI). The felony recidivism rate for insanity acquittees has been found to range from 15 percent to 54 percent, when followed for two to five years.[5,6]

Little is known about the criminal recidivism rate of mentally ill offenders not found NGRI who are arrested for misdemeanant and felony crimes. Guze et al.[7] reported that 85 percent of a sample population, consisting of those with diagnoses of sociopathy, alcoholism, and drug dependence, were re-arrested within eight years. However, there was no indication of the presence of a mental illness in this population. Further, a re-arrest rate of 48 percent within one year for jail detainees who received psychiatric care was found

by Draine et al.[8] However, the study did not have a control group, and the method of statistical analysis did not account for the varying lengths of follow-up time. It was not possible to comment on whether the reported 48 percent was different than the re-arrest rate among non-mentally ill offenders.

Our current study focused on the criminal history of those who have a documented psychiatric illness. They were matched with criminals who did not have a major mental illness. Both groups were followed for up to four years to determine the relative rates of criminal recidivism.

Significance

This study concerning criminal recidivism and mentally ill offenders is important for both community interventions and public policy. If mentally ill offenders are more prone to re-arrest than their non-mentally ill counterparts, then they would be a high priority for efforts aimed at reducing criminal recidivism. Furthermore, this study was designed to identify risk factors for re-arrest within the mentally ill group that could be specifically targeted for interventions. For example, it is possible that interventions such as substance abuse treatment and provisions for psychiatric providers may dramatically influence criminal recidivism. Public policy recommendations concerning issues such as compelled medications for repeat offenders may well arise from this study.

Methods

Setting The KCCF, located in Seattle, WA, has a capacity of 1,623 beds, although the usual occupancy is approx-imately 1,900. It serves as the criminal justice detention center for 31 municipal jurisdictions in the metropolitan area of King County, WA. Adults who are detained by the Port of Seattle, the University of Washington Police, the U.S. Marshals, the Washington State Patrol, the King County Police, or the Washington State Department of Corrections are incarcerated in the KCCF. In addition, juveniles who have been remanded to the adult criminal justice system are also held in the KCCF. There are approximately 60,000 bookings per year in the facility.

Located within the jail is a psychiatric unit with a capacity of 90 beds. The usual occupancy is about 100 inmates. Both men and women are housed on the unit, as are misdemeanants and felons. There are approximately 5,600 admissions to the psychiatric unit per year. In 1990, these admissions involved 1,500 different people. This unit was accredited in 1992 by the Commission on Correctional Health Care, with standards developed by the American Medical Association and revised by the National Commission of Health Care.

At arrest, all people are triaged for physical and mental illness in the booking area. They are referred for psychiatric evaluation if their behavior is considered bizarre, if they report taking psychotropic medications, or if they report suicidality. Psychiatric staff reviews relevant paperwork and interviews the detainee using a structured mental status exam. Information provided by the detainee concerning community psychiatric providers and psychiatric medications is recorded in the detainee's medical record. This informa-

tion is verified by phoning the community psychiatric provider, whose confirmation of the working psychiatric diagnosis is also recorded in the inmate's medical record.

Study Design   A matched retrospective cohort design was used to investigate criminal recidivism of mentally ill offenders compared with offenders who do not suffer from a mental illness. The date-of-study entry was the release date from the first incarceration in the KCCF in 1990. Subjects and the comparison group were followed forward, using the (KC) Jail Daily Index, to determine the date and crime at re-arrest. The outcome event was defined as re-arrest within King County, WA by December 31, 1994. All information was abstracted from existing records.

Study Subjects and Comparison Group   The study subjects in the pilot test were 30 randomly selected detainees who were housed on the psychiatric unit at the KCCF during 1990. Psychiatric illness, as a construct, was determined by the combination of information supplied by the community psychiatric provider (recorded in the medical records) and the structured mental status exam performed by Jail Health Services psychiatric staff. Only those individuals with a major mental illness were included in the study. For the purposes of this pilot study, the presence of a major mental illness was defined by the presence of symptoms consistent with a psychotic disorder or affective disorder and/or psychotropic medications, which would indicate one of these illnesses in remission. Detainees with a diagnosis of personality disorder

only were excluded from the study subjects.

Inasmuch as an individual may be arrested on several charges, or charges may be added after the inmate has been booked, the single most severe charge at arrest was used for this pilot study. The Revised Code of Washington (RCW) ranking system was used to determine the most severe charge at arrest.

The subjects were matched for severity and type of index crime, gender, and age (group) with 30 detainees who were not on the psychiatric unit during 1990. The absence of a psychiatric illness in the comparison group was determined by reviewing the jail medical record.

Both the study and comparison groups consisted of both men and women, and felons and misdemeanants. The frequency matching method was used to match the mentally ill offenders with the non-mentally ill offenders.[9]

Data Collection   Data abstraction forms were developed for this pilot study. Major areas of data abstraction were demographic information, information concerning the index arrest and the re-arrest, psychiatric information at both the index and re-arrest, and previous criminal history.

The data came from two sources: the criminal record of the individual, which is available for public perusal: and the medical record kept by Jail Health Services at the KCCF.

Analysis   Mentally ill offenders were matched with non-mentally ill offenders for age at the index crime, index crime type and severity, and gender. The Mantel-Haenszel χ^2 test was used to deter-

mine the presence of any statistical difference between the two groups with respect to other demographic variables and re-arrest. The Kaplan-Meier survival function was used to model the time to re-arrest for the two groups in this pilot study. Finally, both the t test (log + 1 transformation), and the nonparametric Mann-Whitney U test were used to investigate the length of incarceration for the index crime for both groups.

Results

Demographics and Background Information   The original study group consisted of 30 mentally ill offenders incarcerated in the KCCF and housed on the psychiatric unit in 1990. Medical records were not available for 3 of the subjects; therefore, the study group consisted of 27 mentally ill offenders.

Table 1 shows the characteristics of the mentally ill group used to match a comparison group of non-mentally ill offenders incarcerated in KCCF in 1990. The matching was successful for the variables of age group; gender; crime severity, and index crime.

Other demographic variables and background information are shown in Table 2. Categories for ethnicity, marital status, employment, domicility, and prior arrests were collapsed due to the small number of expected values in cells. No statistical difference for any of the variables was found between the two groups using the Mantel-Haenszel χ^2 test across the 15 different strata (α = .05). However, a difference in marital status and a history of prior misdemeanant arrests both approach statistical significance (p = .13).

Table 1
Variables Matched in the Study Group (Mentally Ill Offenders) and the Comparison Group (Non-Mentally Ill Offenders)

	Mentally Ill		Non-Mentally Ill	
	N	%	N	%
Age group, years				
<20	1	3.7	1	3.7
21–29	13	48.1	13	48.1
30–39	11	40.7	11	40.7
40–49	2	7.4	2	7.4
Gender				
Male	24	88.9	24	88.9
Female	3	11.1	3	11.1
Crime severity				
Misdemeanant	21	77.8	21	77.8
Felony	6	22.2	6	22.2
Index crime				
Trespass	1	3.7	1	3.7
Assault	9	33.3	9	33.3
Prostitution	4	14.8	4	14.8
Property destruction	1	3.7	1	3.7
Hit and run	2	7.4	2	7.4
Theft	9	33.3	9	33.3
Rape	1	3.7	1	3.7

Clinical Characteristics of Mentally Ill Offenders   Clinical characteristics of the mentally ill offenders at the index arrest and re-arrest are shown in Table 3. The frequency of the various mental illnesses is shown, as are the number of study subjects at risk for re-arrest. Of those initially on neuroleptics, 42.9 percent were re-arrested, as were 58.3 percent of those with diagnosed psychosis at the index arrest.

At the time of the index arrest, 14 (51.2%) of the mentally ill offenders had a community psychiatric provider; 92.9 percent of those with a community provider were re-arrested. However, at the index arrest, only seven of the offenders

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Table 2
Background Characteristics of Mentally Ill
and Non-Mentally Ill Offenders

	Mentally Ill		Non-Mentally Ill	
	N	%	N	%
Ethnicity				
Black	12	44.4	13	48.1
Non-black	15	55.6	14	51.9
Marital status				
Never married/divorced	16	59.3	9	33.3
Married/gay/common-law	6	22.2	11	40.7
Unavailable	5	18.5	7	25.9
Employment				
Employed	7	29.2	10	40.0
Unemployed/self-employed	17	70.8	15	60.0
Domicility				
Homeless	8	29.6	2	7.4
Has address	12	44.4	18	66.7
Unavailable	7	25.9	7	25.9
Prior misdemeanant arrest				
None	10	37.0	5	18.5
>0	17	63.0	22	81.5
Prior felony arrests				
None	16	59.3	12	44.4
>0	11	40.7	15	55.6
Drug abuse				
Yes	9	33.3	6	22.2
No	18	66.7	21	77.8
Alcohol abuse				
Yes	13	48.1	16	59.3
No	14	51.9	11	40.7
Intoxicated at arrest				
Yes	17	63.0	21	77.8
No	10	37.0	6	22.2

Table 3
Clinical Characteristics of Mentally Ill
Offenders at Index and Re-Arrest

	Index Arrest $N_1{}^a$	Re-Arrest $N_2{}^b$	N_2/N_1
Diagnosis			
Psychosis	12	7	58.3
Affective Disorder	13	8	61.5
Other Axis I	2	1	50.0
Axis II	6	5	83.3
Medications			
Neuroleptics	7	3	42.9
Mood Stabilizer	5	0	0.0
None	18	6	33.3
Other	1	0	0.0
Community care			
Provider	14	13	92.9
Compliant^c	7	4	57.1

^{a} Frequency of characteristic among mentally ill offenders at time of index arrest; N = 27.
^{b} Frequency of re-arrest among those mentally ill offenders with a particular characteristic; N = 21.
^{c} Compliance of mentally ill offenders who have a community provider.

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with a community provider were compliant with treatment recommendations. This was reduced further at re-arrest, with a 30.8 percent compliance rate.

All medications for the mentally ill offenders were administered orally. Thus, in this pilot study of 27 mentally ill offenders, it was not possible to determine what effects intramuscularly administered medication may have on re-arrest rates.

Length of Incarceration Table 4 shows the mean length of incarceration as a function of index crime for both the mentally ill and non-mentally ill offenders. Mentally ill offenders were incarcerated for an average of 34.0 days, and non-mentally ill offenders were incarcerated for an average of 24.0 days. As the length of incarceration was not normally distributed, the nonparametric test (Mann-Whitney U test) test used to compare the statistical significance of the ab-

Table 4
Length of Incarceration as a Function of Index Crime for Both Mentally Ill Offenders and the Comparison Group

	Mean Length of Incarceration	
	Mentally ill days (standard deviation)	Non-mentally ill days (standard deviation)
Crime severity		
Misdemeanor	28 (46)	16 (38)
Felony	56 (47)	52 (55)
Charge		
Theft	28 (42)	44 (47)
Assault	40 (59)	22 (56)
Prostitution	33 (54)	5 (4)
Property destruction	9 (0)	2 (0)
Criminal trespass	1 (0)	2 (0)
Hit and run	36 (48)	20 (28)
Rape	90 (0)	0 (0)

Figure 1. Relationship of mental illness to re-arrest.

solute difference observed. No statistical difference was found (p = .3357).

The log (1 + length of incarceration) transformation was used to convert the variable to the normal distribution for purposes of linear regression. The independent variables of previous conviction for the same crime as the arrest crime and relative severity of the index crime predicted 32.70 percent of the variability observed in the length of incarceration (p = .0000; df = 2). The presence of a psychotic disorder, affective disorder, or substance abuse did not add significantly to the model. Lambda, a conviction density,[10] was also found not to contribute significantly to the model. There was no statistically significant difference in the length of incarceration between the two groups, even after transformation to log
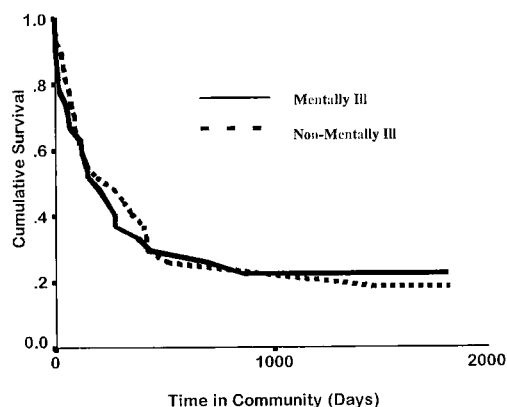
(1 + length of incarceration) (t test: p = .3357; Mann-Whitney U test: p = .710).

Survival Analysis The length of time in the community prior to re-arrest, shown as cumulative survival, is shown in Figure 1. At one year, 60 percent and 68 percent of the non-mentally ill group and the mentally ill group, respectively, had been re-arrested. There was no statistical difference between the two groups for re-arrest over the course of the study (log-rank; p = .97). As shown in Figure 2, those study subjects with diagnosed psychosis at the index arrest were re-arrested sooner than those without psychosis. This difference approaches statistical significance (log-rank; p = .12). Figure 3 shows the effect of the presence of an affective disorder at the index arrest. No statistical difference was seen between the study and the comparison group (log-rank; p = .25). No significant difference in community survival was seen between the two groups when the presence of substance abuse was considered (log-rank; p = .67).
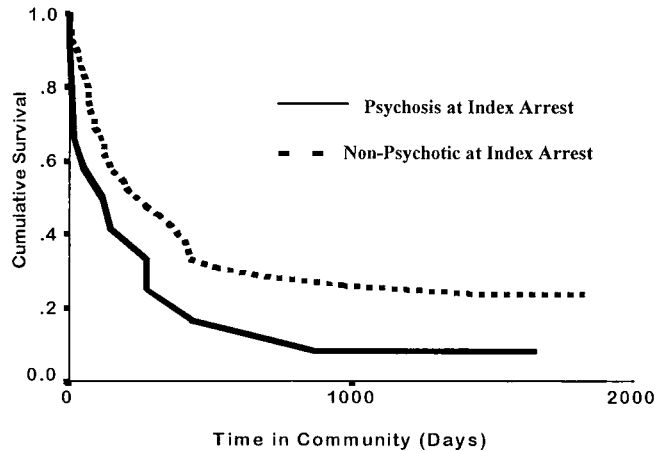
Calculation of Study Size Calcula-

Figure 2. Psychosis at index arrest.

tions for the sample size needed for a main study required balancing clinical significance with a feasible sample size. The risk of 60 percent for re-arrest among the non-mentally ill group was used to calculate the size of study needed to show a significant difference between the mentally ill and the non-mentally ill group. In consultation with criminal justice officials and community mental health providers, it was decided that a 30 percent increase in the re-arrest rate (i.e., 30% of 60%, or 18 percentage points using a

Figure 3. Relationship between an affective disorder and re-arrest.

two-tailed t test), for the mentally ill group would have important clinical and policy formulation implications. Thus, the sample size needed was calculated to be 125 people in each group (see *Appendix A*).

Discussion

This pilot study examined the differences in re-arrest rates for mentally ill and non-mentally ill criminal offenders. As suggested in the literature,[12, 13] it was hypothesized that mentally ill offenders are re-arrested more frequently than their non-mentally ill counterparts. Furthermore, in a study by Steadman[14] it was suggested that mentally ill offenders were incarcerated for a longer period of time than those who are not mentally ill.

Although our study does not show statistically significant differences between the two groups, the study was limited by several features inherent in its design. The first of these limitations is the study size. As this was the first (known) study of this design, it was necessary to conduct
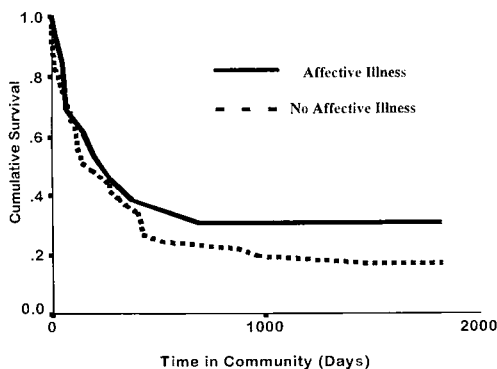
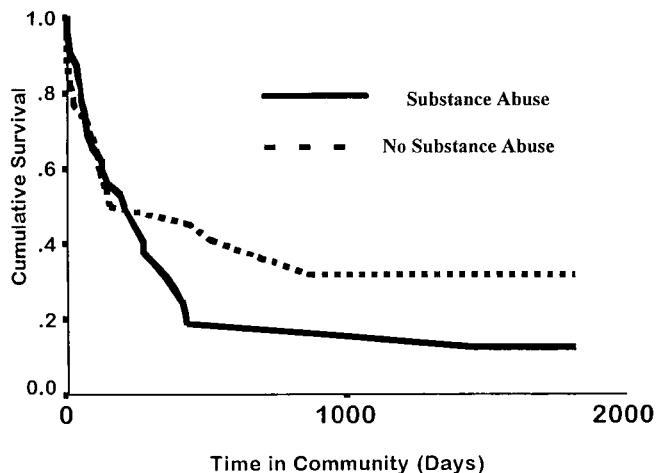# Criminal Recidivism in Mentally Ill Offenders

Figure 4. Relationship between a history of substance abuse and re-arrest.

a pilot study with a small number of individuals in each group. Given that there were only 27 people in each group, it was unlikely from the outset that significant differences would be found. This might be corrected by using a larger study sample. The issue concerning the lack of mentally ill offenders on depot (intramuscular) neuroleptic medication might also be corrected by using a larger study, as the 95 percent confidence limits for the prevalence of intramuscular neuroleptic treatment extends up to 3 of the 27 subjects (11%), despite the observations of 0 subjects on such treatment in this small pilot study.[15] Furthermore, building a risk assessment model for criminal recidivism among the mentally ill might be possible if the larger study showed a statistical difference in their re-arrest rate compared with that of the non-mentally ill offenders.

Limiting the study to criminal offenses committed within the KCCF jurisdiction also reduces the likelihood of finding a difference in re-arrest rates between mentally ill and non-mentally ill offenders. It is possible that individuals from one group are more mobile than those in the other group and were re-arrested in another county. It is possible that this represents a systematic bias. Finally, there are possible systematic biases inherent in the recognition and diagnosis of mental illness. This is true both in the community and particularly within a correctional facility.[16]

Despite the low statistical power of this study, several interesting trends were observed. Despite documentation of the presence of a major mental illness, almost half of the study group did not have a community psychiatric provider. Furthermore, those who did have a provider were generally noncompliant with treatment recommendations. It is possible that this contributed to the high re-arrest rate of this group. The presence of psychosis also may contribute to the high re-arrest rate in the mentally ill group.

Clearly it is necessary to conduct a study of adequate size to determine whether there is a difference in criminal recidivism between mentally ill and non-mentally ill offenders. Policy formulation and resource allocation should stem from such a study. Without this information we will continue to base our decisions on anecdotal information.

Appendix A

The sample size was calculated as follows[11]:

$$N = [Z_\alpha(P(1 - P)(1/q_1 + 1/q_2))^{0.5} + Z_\beta$$
$$(P_1(1 - P_1)(1/q_1) + P_2(1 - P_2)(1/q_2))^{0.5}]^2/(P_1 - P_2)^2$$

Where:

N = Total number of subjects needed;

Z_α = 1.96 (95% confidence interval);

P = $q_1 P_1 + q_2 P_2$;

q_1 = proportion of mentally ill offenders = 27/54;

q_2 = proportion of non-mentally ill offenders = 27/54;

Z_β = 0.84 (power = .80);

P_1 = proportion of mentally ill offenders re-arrested = 18/27; and

P_2 = proportion of non-mentally ill offenders re-arrested = 16/27.

Therefore, 125 subjects are needed in each group.

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