

Outcomes of Assertive Community Treatment in an NGRI Conditional Release Program

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This study describes the five-year outcomes of an assertive community treatment (ACT) program that monitored 83 acquittees found not guilty by reason of insanity (NGRI) placed on conditional release (CR) into the community. Data were collected by retrospective review of court reports and a state computer database. Five arrests and 60 hospitalizations occurred during the study period; overall, the NGRI acquittees were in the community for 83 percent of the time they were eligible for conditional release. Multivariate logistic regression analysis showed that the duration of conditional release was a positive predictor, and paranoid schizophrenia was a negative predictor of hospitalization or arrest. The estimated annual rate (EAR) of hospitalization was 14.0 percent, and the arrest EAR was 1.4 percent. The ACT model for NGRI acquittees on CR yielded a low arrest rate, a moderate hospitalization rate, and good community tenure.

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Many jurisdictions in the United States have statutory provisions for the conditional release (CR) of persons found not guilty by reason of insanity (NGRI).¹ NGRI acquittees are typically committed to a state hospital after the verdict and remain in the hospital for extended periods. However, most, if not all, NGRI acquittees eventually return to the community for two reasons: first, recent advances in the treatment of severe mental illness have made it probable that NGRI acquittees will receive effective pharmacotherapy, leading to at least partial remission of the symptoms of their mental illness; second, many states provide some statutory limit on the duration of commitment after a finding of NGRI. When an NGRI acquittee is conditionally released, usually from a state psychiatric hospital, he or she is discharged to a community setting but remains under court or agency jurisdiction, such that, should the acquittee violate the conditions of the release, he or she can be returned to an institutional setting.

Previous research on CR of NGRI acquittees focused on the demographics of this population and on broad outcomes, typically measured by arrest rates

and hospitalization rates subsequent to release. As an example, a recent meta-analysis found that reported statewide estimated annual arrest rates for NGRI acquittees on CR ranged from 3.4 to 7.8 percent, and estimated annual hospitalization rates ranged from 14.5 to 25.8 percent.^{2,3} Most studies of CR have been based on statewide populations and have come from only a handful of states. New York, Oregon, Maryland, and California, in particular, have been the subject of a number of studies. This research has, over time, made it clear that CR can be a reasonable means of reducing the reoffense rate of NGRI acquittees, thus reducing this population's risk to public safety. However, it has been difficult to determine what program characteristics make CR effective, particularly from aggregate, statewide studies. One theory that emerged from these studies was that arrest rates were inversely related to both hospitalization rates and the frequency of outpatient mental health contacts.³ A recent review of the CR literature questioned this relationship and suggested that arrest rates were primarily related only to duration of time in the community. The author noted the difficulty of comparing the results of articles on CR, argued for research into specific interventions that might decrease the risk of arrest, and called for improved description of outcomes, such as community tenure.²

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There are very few examples of research on program-level interventions involving NGRI acquittees. Based on a review of the literature, in the past 20 years only four studies have examined individual, agency-based CR programs.⁴⁻⁷ Two of the reports of these studies described the outcomes of the Isaac Ray Center in Chicago. The first, in 1985, reported one arrest among 44 (2.3%) patients, along with 11 (25%) hospitalizations, over two years and described the program as “a university-based, specialized treatment center for mentally disordered offenders” that used the model of “tailoring type and level of intervention to individual patients’ capacities, motivation, and needs.”⁴ The second article on this program, published in 1999, reported seven (19%) arrests of 36 patients who lived in the community over the course of one year, along with 20 (56%) hospitalizations and offered no elaboration on the nature of the program.⁵ Bloom *et al.*⁶ described a large community hospital day treatment program that provided both individual and group therapies in nine-week modules to clients referred by the Oregon Psychiatric Security Review Board, as well as other, nonforensic, chronically mentally ill clients. Over two years, 11 (12%) of 91 NGRI clients in this program had their CRs revoked because of a new crime, of a total of 46 (51%) revocations. Lamb *et al.*⁷ studied a CR program with 79 clients in Los Angeles that was characterized by a reality-based approach and organized around the principles of case management and reported a 32 percent arrest rate and a 47 percent hospitalization rate over five years.⁷

Assertive community treatment (ACT), a treatment approach with documented success in maintaining nonforensic patients with severe mental illness in the community,^{8,9} has become a potential best practice in public sector psychiatry.¹⁰ First described nearly 30 years ago by an innovative group at the Mendota Mental Health Institute in Wisconsin, ACT is a model of community treatment in which a team of mental health professionals is responsible for the care of a defined and finite group of severely mentally ill people.¹¹ An ACT team functions much like an inpatient treatment team, with frequent team meetings, multidisciplinary membership, team responsibility for all patients, direct provision of services, and 24-hour-a-day, seven-day-a-week availability. A critical element of ACT is a low patient-to-staff ratio; the ideal has been defined as 10:1.¹⁰ Another important element is the provision of clinical

services where the client lives and works, not just in the clinic itself. ACT has been found to be superior to traditional case management in the treatment of severe and chronic mental illness in the community, with reduction of the proportion of patients readmitted to the hospital, significant reduction in hospital length of stay (LOS), and improved employment status and patient satisfaction.^{8,9} ACT has also been found to be cost effective overall for patients with a history of extensive use of the hospital. Research on U.S. programs has found that the improved outcomes have come at a total cost (including hospital stays) that is typically less than that of standard outpatient care, though programs in the United Kingdom have not found similar cost savings.^{9,10}

There are only three published reports on the role of ACT in forensic populations.¹²⁻¹⁴ None of these accounts focused on NGRI acquittees. Solomon *et al.*¹² found that ACT was not more effective than other models of outpatient treatment in preventing jail recidivism among a population of homeless, mentally ill clients after release from the city jail. Wilson *et al.*¹³ studied a group of mentally ill clients with a history of multiple psychiatric hospitalizations and severe nonadaptive social and behavioral problems who were assigned to an ACT team on release from jail. They found that the ACT clients spent fewer days in jail and were in the community significantly longer prior to arrest than those in a control group.¹³ In 2002, the Nathaniel Project, a felony diversion program in New York that uses an ACT model, received a Significant Achievement Award from the American Psychiatric Association. The program was described in the journal *Psychiatric Services* as an effective alternative to incarceration, as it had achieved good success in finding housing for its clients, retaining clients in the program, and reducing the number of arrests of its clients, all at significant savings compared with incarceration.¹⁴

In the early 1990s, a community mental health center in Cleveland, Ohio, that had experience working with forensic clients started an ACT-model treatment team to provide services to people found NGRI who had been placed on CR from the local state hospital. All of the referrals to the CR program either came from the state hospital through criminal court or, much less frequently, directly from the court. In Ohio, to gain conditional release from the hospital, an NGRI acquittee must go before the criminal court for a hearing. The hospital treatment team and the

conditional release team program manager present their evaluations at this hearing and the judge, the prosecutor, and the public defender have the opportunity to question the hospital and community staff. The only other route to conditional release, which is not commonly used, is if the judge, immediately after the NGRI verdict, finds that the acquittee does not require hospitalization, using the “least restrictive alternative” test.¹⁵

The Cleveland CR program worked effectively with the criminal courts from its onset, with the result that the court-ordered conditions of release have, for several years, been based on a template provided to the court as part of the report by the CR program manager at the conditional release hearing. The conditions always include full compliance with the CR program, which consists of meeting with the assigned case manager at least once a week, monthly psychiatrist appointments, compliance with recommended psychiatric medications, and attendance at a monthly meeting of the entire CR program. Substance abuse interventions are also frequently mandated and range from participation in an intensive outpatient program, provided by a separate program within the same agency as the CR team, to mandated attendance at a specified number of Alcoholics Anonymous meetings per week. Acquittes on CR cannot change residence without court approval.

This study reports on the performance of this ACT team over a five-year period, using the outcomes of hospitalization and arrest rates and community tenure. In addition, the results were statistically analyzed to identify any positive or negative factors associated with successful CR.

Methods

This study was reviewed and approved by the Institutional Review Board of Northcoast Behavioral Healthcare, a hospital of the Ohio Department of Mental Health, where the author was employed during the data collection phase of this study. The data collection was completed in July of 2001. All of the data are presented in aggregate form, with the exception of the use of limited, nonidentifiable data on those acquittes arrested during the study period.

The Study Population

The intent of this study was to examine the performance of a CR program based on the ACT model over a defined period. The CR program served all

NGRI acquittes placed on conditional release in Cuyahoga County, Ohio, during the five-year study period of January 1996 through December 2000. Cuyahoga County includes the city of Cleveland and has a population of over one million people. This study examined all NGRI acquittes served by the CR program at any time during the study period. At the beginning of the study period, the CR program had 30 clients in the community on CR. An additional 53 acquittes were placed on CR with the CR program over the course of the study period.

Ohio NGRI acquittes achieve CR through a statutorily defined process that emphasizes thorough evaluation of the acquittee prior to release on CR.¹⁶ Ohio statute mandates review by the criminal court of any increase in hospital privileges to unsupervised on-grounds, supervised off-grounds, and unsupervised off-grounds, as well as for conditional release status. At each level, the prosecutor may request a court hearing on the proposed increase in privileges. At each step, reports are prepared for the court by the hospital. In addition, prior to the conditional release hearing, an outside forensic agency must complete an independent evaluation of the acquittee.

The Study Program

At the beginning of the study period, the CR program at the agency consisted of a program manager, who was a licensed independent social worker; four case managers, all with bachelor's degrees; a part-time registered nurse; and a part-time forensic psychiatrist. By the end of the study period, the team had added a lead case manager, for a total of five case managers. The program manager, the nurse, and the psychiatrist did not function as case managers. This team was responsible for continuous coverage of their clients, 24 hours a day, seven days a week, and one case manager and the program manager were always available by beeper for client contact. The overall client-to-case manager ratio, which was set by the county mental health board, was 20:1. Each NGRI acquittee was typically assigned to the CR ACT team well in advance of the actual granting of CR. As a result, at the end of 2000, approximately one-half of the team's clients were in the state hospital and one-half were in the community on CR. The case managers attended monthly team meetings and assisted with community passes for their hospitalized clients, but nearly all their time was reserved for their clients in the community. The number of acquittes

on CR under the supervision of the team at a given time increased over the course of the study, from approximately 35 to approximately 45. Thus, the functional, community-based, client-to-case manager ratio was approximately 10:1.

Sources of Data

Clinical and demographic data for all participants in the CR program between 1996 and 2000 were determined by retrospective review, by the author, of the most recent court reports on each acquittee on CR, which were maintained by the state hospital. In addition, a state computer database was used as a source of demographic and clinical data. The data were recorded on a standard collection sheet and were later entered into a Microsoft Excel worksheet for analysis. The data collected included the age and gender of the acquittee; the date, nature, and victim of the NGRI offense; any known prior history of arrest or hospitalization; the diagnosis; the duration of the initial NGRI hospitalization, and the date(s) of CR and subsequent hospitalization and/or arrest.

The court reports on the acquittees are statutorily required.¹⁷ The reports were prepared by the CR program psychiatrist, if the acquittee was in the community, or the state hospital psychiatrist, if the acquittee was in the hospital. These reports were prepared and submitted to the criminal court prior to any hearing regarding the initial granting of conditional release and at least every two years subsequently, as part of the required renewal hearings regarding the civil commitment of NGRI acquittees. Ohio statute limits the maximum duration of any one order of civil commitment to two years.¹⁸ It also limits the total time under court supervision of NGRI acquittees to the maximum sentence of the NGRI offense.¹⁹ The civil commitments of the NGRI acquittees were routinely renewed, upon petition by either the state hospital or the agency that monitors the acquittee's CR, as Ohio courts use the "totality of the circumstances" rule in assessing the need for ongoing commitment.²⁰

Some pertinent data were not routinely or consistently available from the court reports. Though substance abuse treatment was provided within the same agency as the ACT team and the CR team worked closely with the substance abuse program, the actual frequency and intensity of the mandated substance abuse interventions were not systematically recorded in the two-year court reports and thus were not avail-

able for this study. Clients who were in the hospital prior to being granted CR were routinely placed in 24-hour supervised housing as their first step into the community on CR. Acquittees were then advanced to less intensely supervised settings over time, including to independent housing, based on compliance with the conditions of release and clinical stability. Court approval was required for any change in residence. However, the time each acquittee spent at each level of supervised housing was not systematically recorded in the court reports.

Additional demographic information and data on use of the state hospital were drawn from a computerized database maintained by the Ohio Department of Mental Health. Acquittees on CR could be hospitalized only in a state hospital, both immediately after the finding of NGRI and for any return to the hospital while on CR.²¹ Hospitalization while on CR did not necessarily lead to formal revocation of CR, and the state database did not include whether the acquittee's CR was temporarily suspended or revoked on admission. As a result, the primary outcomes for this study are hospitalization or arrest and not formal revocation of CR. Data on arrests while on conditional release were drawn from the court reports. Since these reports were filed only every two years, the study group's arrest history was reviewed with the CR program manager, to ensure that all arrests were included in the study data.

Data Analysis

The main outcomes measured in this study were potential community tenure, actual community tenure, the number of arrests, and the number and duration of hospitalizations of CR acquittees during the study period. Potential community tenure was defined as the length of time from the beginning of the study (January 1, 1996), if the acquittee was on CR at the beginning of the study, or the release of an acquittee into the community on CR, to the end of the study period (December 31, 2000). Thus, if an acquittee was in the community on CR on January 1, 1996, the potential community tenure was 5 years. If an acquittee was placed on CR on July 1, 1998, the potential community tenure was 2.5 years. Actual community tenure was defined as the time each acquittee spent in the community after release on CR. Those acquittees who were returned to the state hospital while on CR thus had an actual community tenure that was less than the potential community

Table 1 Primary Psychiatric Diagnoses of NGRI Acquittees in ACT CR Program

Diagnosis	Male, %	Total for Diagnosis, %
Paranoid schizophrenia	40 (66)	54 (66)
Other schizophrenia	5 (8)	5 (6)
Schizoaffective disorder	7 (12)	10 (12)
Bipolar disorder	5 (8)	9 (11)
Other diagnoses	4 (7)	5 (6)
Comorbid Substance abuse	28 (46)	35 (42)

tenure. Community tenure was defined as actual community tenure divided by potential community tenure and was expressed as a percentage.

The number of acquittees hospitalized and arrested was also analyzed using the method described in Wiederanders *et al.*,³ by calculating estimated annual rates (EAR)—for example: arrest EAR = percentage of acquittees arrested/mean potential community tenure.

This method provides a useful way to convert arrest and hospitalization rates into annual rates based on the time the acquittee is eligible for CR. It should be noted that a weakness of the EAR methodology is that it underestimates the contribution of acquittees who were arrested or hospitalized more than once.

Two subgroups of acquittees, those whose actual community tenure equaled their potential community tenure and those who were hospitalized or arrested during the study, were compared, using *t* test and chi-square analyses. Univariate and multivariate logistic regression analyses were performed to iden-

tify factors that contributed to study outcomes; *p* < .05 was considered significant.

Results

The CR program monitored a total of 83 NGRI acquittees between 1996 and 2000, including 61 (74%) male and 22 (26%) female acquittees. The average age of the study population in December 2000 was 46.9 years (range, 23–78). Schizophrenia (71%) was the most common primary psychiatric diagnosis, followed by schizoaffective disorder (12%) and bipolar disorder (11%). Some form of alcohol and/or drug abuse, either current or historical, was noted in 42 percent of the acquittees (Table 1). All but one of the acquittees showed overt symptoms of psychosis at the time of the NGRI offense, based on the account of the NGRI offense contained in the court reports.

The NGRI offenses were predominantly violent in nature: 82 percent involved a crime against a person and 13 percent involved arson. The most frequent offense was felonious assault (49%), which is defined in Ohio as causing serious physical harm to another or threatening such harm with a weapon.²² The average age at the time of the NGRI offense was 35.3 years (range, 19–64). The most frequent victims of the offenses were people known to the acquittee; 34 percent of the victims were family members, friends, or neighbors of the acquittee. Police officers were the primary victims of 19 percent of the acquit-

Table 2 Offenses and Victims of and Locations of Arson by NGRI Acquittees

A Offenses and Victims						
Offenses	Victims					Total for Offense, %
	Family	Friend or Neighbor	Police	Nonpolice Stranger	Unknown or NA	
Murder	9	1	0	2	0	12 (14)
Attempted murder	1	0	3	3	0	7 (8)
Felonious assault	8	7	13	10	3	41 (49)
Robbery	1	0	0	3	1	5 (6)
Stalking	0	1	0	1	0	2 (2)
Kidnapping	1	0	0	1	0	2 (2)
Concealed weapon	0	0	0	0	3	3 (4)
Totals, %	20 (24)	9 (10)	16 (19)	20 (24)	7 (8)	72 (87)

B Locations of Arson			
Arson	Own Living Area		Total, %
		Other	
	8	3	11 (13)

tees, while nonpolice strangers accounted for 24 percent of the victims (Tables 2A, 2B).

Fifty one (61%) of the acquittees had a history of state psychiatric hospitalizations prior to the NGRI offense and an additional nine (11%) had a history of other prior psychiatric hospitalization(s) mentioned in a court report. Seven patients (8%) were known to have committed the NGRI offense during the index episodes of their mental illnesses. The mean duration of the initial NGRI hospitalization (prior to the first granting of CR) was 4.3 ± 4.3 years (range, 0–18.2), with a median duration of 2.5 years. Twenty-seven (33%) acquittees were known to have a history of arrest prior to the NGRI offense and 13 (16%) had no known previous arrests; however, for the remaining 43 acquittees (52%), the records did not state whether there were any prior arrests. The mean potential community tenure for the study group was 3.4 ± 1.6 years, with a median of 3.5 years. The mean actual community tenure of the acquittees was 2.8 ± 1.5 years, and the median actual community tenure was 2.7 years. The overall percentage community tenure of the acquittees was thus 83 percent.

Thirty-nine (47%) clients were hospitalized at least once (range, 1–4 times) during the study period. A total of 60 hospitalizations occurred during the study period, with an average length of stay of 1.2 ± 0.9 years (range, 0.1–3.2) and a median duration of 1.1 years. The overall hospitalization rate was 0.2 hospitalizations per patient per year. Fourteen clients accounted for more than half of the hospitalizations; 25 acquittees were hospitalized only once. The hospitalization EAR during the study period was 14.0 percent.

Four CR clients were arrested a total of five times during the study period, with three arrests for felony charges and two for misdemeanor charges. The overall arrest rate was 0.02 arrests per patient per year. None of the arrests resulted in a prison sentence. The acquittees were held in jail for a negligible period of time after arrest. The time to arrest after release on CR ranged from 0.1 to 1.6 years. The arrest after 0.1 year was an acquittee who had been on CR for one year but was arrested just after the start of the study period. Four of the arrests led directly to hospitalization. One acquittee remained in the community after his misdemeanor arrest (Table 3). All the acquittees hospitalized after arrest later returned to the community on CR, though one returned to the hospital again because of arrest just prior to the end of the

Table 3 Time to Arrest, in Years, After Placement on CR

Acquittee	NGRI LOS	Potential CR	Time to Arrest	Hospital LOS After Arrest
1	1.7	5.0	1.6; 1.5*	1.9; 0.1 [†]
2	2.5	2.7	1.4	1.0
3	2.3	1.3	1.3	0.0 [‡]
4	5.9	5.0	0.1 [§]	1.9

* Acquittee was in hospital for 1.9 years after first arrest.

[†] Acquittee was hospitalized just prior to end of study period.

[‡] Acquittee was not hospitalized after arrest.

[§] Acquittee had been on CR for 1 year prior to arrest, which occurred shortly after the start of the study period.

study period. This acquittee accounted for two felony charges, both for resisting arrest. He twice fought with the deputies sent by the judge to return him to the hospital, at the request of the CR program, because of medication noncompliance and consequent re-emergence of paranoia. The other felony arrest was of an acquittee who was charged with escape. While on CR, he had decamped to Florida for a time and was arrested on his return to Ohio. (Any purposeful break of detention results in a felony charge in Ohio.²³) The misdemeanor charges were solicitation and disorderly conduct. The arrest EAR was 1.4 percent.

For the purposes of statistical analysis, the study population was divided into two populations. Group A ($n = 40$) consisted of those acquittees who had been hospitalized and/or arrested while on CR, and Group B ($n = 43$) consisted of those who had not been. Hospitalizations and arrests were considered together for this analysis because few arrests occurred during the study, and all but one of the arrests led to a hospital stay. The two populations were similar in many respects, but were significantly different with regard to length of potential CR (Group A: 3.7 ± 1.5 years; Group B: 3.0 ± 1.6 years; $p = .03$). In addition, diagnoses of paranoid schizophrenia and bipolar disorder and an NGRI offense of murder showed trends toward statistically significant differences (Table 4).

When the demographic and clinical characteristics of the two groups were compared using univariate logistic regression, length of potential CR emerged as a statistically significant predictor of hospitalization or arrest, with an odds ratio (OR) of 1.37 (95% confidence interval [CI] 1.03–1.84, $p = .03$). A diagnosis of paranoid schizophrenia (OR = 0.42, 95% CI 0.17–1.06, $p = .06$) showed a trend toward being a protective factor for hospitalization or arrest, as did an NGRI offense of murder (OR = 0.31, 95% CI

Table 4 Descriptive Analysis of Group A vs. Group B

Variable	A: Hospitalized or Arrested (n = 40)	B: Neither (n = 43)	p
Age on 12/31/2000, y	48.1 ± 10.1	45.8 ± 11.5	0.34
Age at offense, y	36.7 ± 9.1	34.0 ± 9.4	0.18
Male	28 (70)	33 (77)	0.49
Paranoid schizophrenia	22 (55)	32 (74)	0.06
Schizoaffective disorder	6 (15)	4 (9)	0.42
Bipolar disorder	5 (13)	1 (2)	0.07
Substance abuse	16 (40)	12 (28)	0.24
Murder	3 (8)	9 (21)	0.08
Felony assault	20 (50)	19 (44)	0.60
Arson	6 (15)	9 (21)	0.65
NGRI LOS, y	4.1 ± 3.6	4.5 ± 4.3	0.67
Potential CR, y	3.7 ± 1.5	3.0 ± 1.6	0.03
Actual CR, y	2.5 ± 1.3	3.0 ± 1.6	0.14

Data are presented as mean ± SD or number (percentage). Probabilities calculated using *t*-test (means) and chi-square (number) analyses.

0.07–1.23, *p* = .08; Table 5). When these three factors were utilized in multivariate logistic regression analyses, both potential CR (OR = 1.5, 95% CI 1.1–2.1, *p* = .01) and a diagnosis of paranoid schizophrenia (OR = 0.4, 95% CI 0.1–1.0, *p* = .05) were significant predictors of the outcome of hospitalization or arrest, though in opposite directions, and an NGRI offense of murder (OR = 0.3, 95% CI 0.1–1.1, *p* = .06) was very nearly a significant predictor. The overall model fit of these three factors was highly significant (*p* = .004; Table 6).

Further analysis showed that an NGRI offense of murder was not associated with a diagnosis of paranoid schizophrenia, as the prevalence of murder among acquittees with paranoid schizophrenia was 17 percent versus 10 percent for all other diagnoses, which was not a significant difference (Fisher's exact

Table 5 Univariate Logistic Regression Analysis of Outcome of Hospitalization or Arrest

Variable	Odds Ratio	95% CI	p
Prior arrests	0.98	0.84–1.13	0.79
Prior hospitalization	1.01	0.97–1.06	0.49
NGRI LOS	0.98	0.88–1.08	0.70
Actual CR	0.80	0.59–1.09	0.15
Potential CR	1.37	1.03–1.84	0.03
Age at offense	1.03	0.98–1.08	0.18
Age in 2000	1.02	0.98–1.06	0.34
Gender	0.71	0.27–1.88	0.48
Murder	0.31	0.07–1.23	0.08
Assault	1.59	0.66–3.82	0.30
Arson	1.34	0.38–4.79	0.65
Bipolar disorder	3.62	0.69–19.10	0.10
Paranoid schizophrenia	0.42	0.17–1.06	0.06
Schizoaffective disorder	1.72	0.44–6.61	0.42
Substance abuse	1.72	0.69–4.32	0.24

Table 6 Multivariate Logistic Regression of Outcome of Hospitalization or Arrest

Variable	Odds Ratio	95% CI	p
Potential CR	1.51	1.10–2.07	0.01
Paranoid schizophrenia	0.36	0.13–0.99	0.05
Murder	0.25	0.06–1.08	0.06
Overall Model Fit	$\chi^2 = 13.35$	<i>df</i> = 3	0.004

test, *p* = .02). Thus, association with that diagnosis cannot explain the nearly significant association of murder with a better outcome. Acquittees who committed murder were kept in the hospital for a longer time than other acquittees before being placed on CR, due to the severity of the NGRI offense. The mean NGRI LOS for acquittees who committed murder was 7.47 ± 4.99 years, versus 3.75 ± 3.89 years for all other offenses, a significant difference (*t* test, *p* = .01).

The duration of the initial NGRI hospitalization was not a significant predictor of hospitalization or arrest. When the outcomes of the study group were examined in groups based on the LOS of the NGRI hospital stay, no clear trend emerged (Table 7, Fig. 1). The range of mean potential community tenure for the groups was 2.6 to 4.6 years, and the range of mean actual community tenure was 2.0 to 4.6 years. The range of mean community tenure by group was 58 to 99 percent. The group with NGRI LOS of 6.1 to 7.0 years had the lowest community tenure because three of the six acquittees in this group had an actual CR of less than one year.

When examined in groups based on years of potential CR, a modest trend toward decreasing com-

Table 7 Analysis of Outcomes by LOS of Initial NGRI Hospitalization

LOS of Initial NGRI Hospitalization, y	Number in Group	Potential Community Tenure, y (Mean)	Actual Community Tenure, y (Mean)	Community Tenure, %
0–1.0	15	3.2	2.5	79
1.1–2.0	13	2.6	2.0	79
2.1–3.0	17	3.4	3.1	91
3.1–4.0	6	4.2	3.8	92
4.1–5.0	4	3.4	2.4	70
5.1–6.0	7	4.3	3.2	75
6.1–7.0	6	2.9	1.6	58
7.1–8.0	2	3.8	3.6	96
8.1–9.0	4	4.6	4.6	99
9.1–10.0	2	4.4	2.8	64
>10.1	7	2.9	2.6	91
Total	83			
Column mean		3.4 ± 1.6	2.8 ± 1.5	83

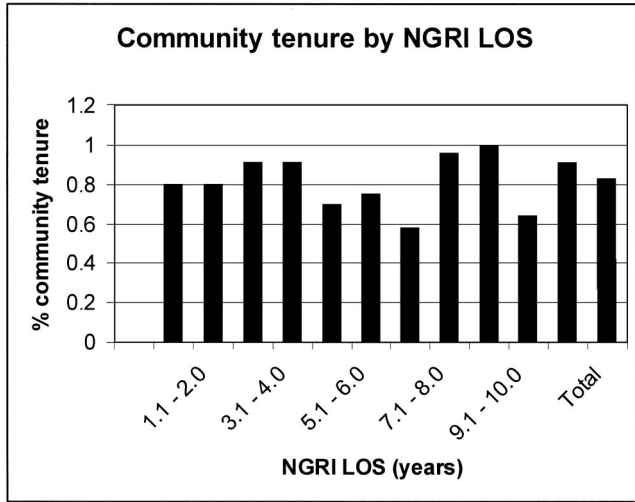


Figure 1. Community tenure by NGRI LOS.

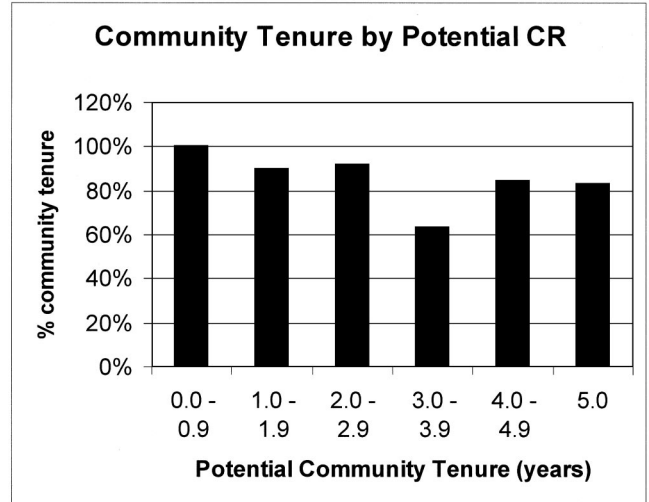


Figure 2. Community tenure by length of potential CR.

munity tenure with increasing potential community tenure emerged (Table 8, Fig. 2). As might be expected, the group with the shortest eligibility for CR had the highest community tenure (100%). The group with the lowest community tenure (63%), that of potential community tenure of 3.0 to 3.99 years, had three acquittees of the 10 in the group with actual community tenure of less than 1 year. No other group, except the group with potential community tenure of less than one year, had more than two acquittees with an actual community tenure of less than one year. Hospitalizations per acquittee per year fell into a narrow range, of 0.1 to 0.3 per year, with an overall mean of 0.1 hospitalizations per acquittee per year. Only one group, acquittees with potential CR of less than one year, had an arrest rate, per acquittee per year, of more than zero, when rounded to the nearest tenth. The overall mean arrest rate was 0.02 per acquittee per year.

The results of this study can be reasonably compared to previously reported results. To increase the relevance of this comparison, studies published in the past 10 years were used, plus the studies used in the meta-analysis by Wiederanders *et al.*³ Based on a review of the literature and use of a combination of computer and manual search strategies, only six studies with original data on outcomes of NGRI acquittees on CR in the community appear to have been published in the past 10 years.^{1,5,24-26} The Bloom and Williams monograph,¹ published in 1994, described the outcomes of the Oregon Psychiatric Security Review Board, using data largely from the 1980s. One article described a city-based CR program, as discussed in the introduction.⁵ Two of the articles were published in 1992, and described statewide results from California²⁴ and Maryland.²⁵ The most recent study, published in 1999, used results from Missouri.²⁶ Only one study compared the out-

Table 8 Analysis of Outcomes by Potential CR

Potential CR, y	Number in Group	Potential CR, y (Mean)	Years in Community (Mean)	Community Tenure, %	Hospitalizations	Hospitalizations per Acquittee per Year of Potential CR*	Arrests	Arrests per Acquittee per Year of Potential CR*
<1.0	7	0.7	0.7	100	1	0.2	1	0.2
1.0-1.99	13	1.4	1.3	90	5	0.3	0	0.0
2.0-2.99	17	2.5	2.3	92	5	0.1	1	0.0
3.0-3.99	10	3.6	2.3	63	8	0.2	0	0.0
4.0-4.99	6	4.4	3.8	85	2	0.1	0	0.0
5.0	30	5.0	4.2	83	18	0.1	3	0.0
Column total	83				39		5	0.0
Column mean		3.4	2.8	83		0.1		0.0

* Rounded to nearest tenth.

comes of NGRI acquittees on CR in different states over the same study period. This study, by Callahan and Silver,²⁷ used statewide data on CR drawn from Connecticut, Maryland, New York, and Ohio for the period 1987 to 1992. The Wiederanders *et al.*³ meta-analysis was also included in the comparison, though it analyzed three studies published in 1991 and 1994, because these studies were selected using criteria of a sample size more than 100, presence of data on quantity of services provided, and outcomes of arrest and hospitalization. The three studies were based on statewide data from California,²⁴ Oregon,¹ and New York.²⁸

The demographics of the study group of 83 NGRI acquittees were generally similar to the demographics reported in the above studies and in the Wiederanders *et al.*³ meta-analysis.³ Schizophrenia was diagnosed in 66 percent of this study group, compared with a range of prevalence of 51 percent to 68 percent in statewide studies of acquittees on CR in California, Connecticut, Maryland, Missouri, New York, Ohio, and Oregon.^{3,26,27} The percentage of study group acquittees known to have prior arrests (33%) was lower than that reported for acquittees on CR in the Callahan and Silver²⁷ article (range 52.0%–80.0%, for Connecticut, Maryland, New York, and Ohio), but the data for this variable were incomplete in this study. The mean LOS for the NGRI hospitalization preceding CR for the study group was 4.6 years, with a median of 2.6 years. The mean NGRI LOS reported for acquittees placed on CR in New York, Oregon, California, and Missouri ranged from 1.5 to 4.8 years, with the LOS increasing from New York to Missouri, respectively.^{3,26} The mean age of the study group at the time of the offense was 35.3 years, comparable with the age at acquittal of CR acquittees in Missouri, Connecticut, Maryland, New York, and Ohio, which ranged from 33.2 to 36.9 years.^{26,27} The NGRI offense of the study group was predominantly violent (82%) and was similar to the prevalence of violent NGRI offense in New York (82%) and California (86%), but higher than the prevalence in Oregon (46%) and Missouri (46%).^{3,26} The proportion of male acquittees was high in the study group (74%) and in comparable studies, where the range was from 63 to 88 percent.^{3,26,27}

The arrest EAR for the CR program was 1.4 percent and the hospitalization EAR was 14.0 percent. The arrest EAR compares favorably with the arrest

Table 9 EAR for Arrests and Hospitalizations

	ACT CR Program	New York	Oregon	California
Arrest rate	1.4%	5.7%	7.9%	3.4%
Hospitalization rate	14.0%	14.5%	25.8%	20.4%
Contact frequency (monthly)	>6.3	2.1	7.3	14.5

State data are from Wiederanders *et al.*³ and Harris.²

EARs reported in 1997 for three statewide programs, which ranged from 3.4 to 7.9 percent, while the hospitalization EAR is just below the range reported in the same study (14.5%–25.8%)^{2,3} (Table 9). The frequency of contact between CR program staff and the acquittees was estimated to be at least 6.3 contacts per month, based on weekly case manager appointments and monthly program meetings and psychiatrist appointments. Substance abuse treatment was often mandated by the court, but quantification of these contacts was not available. Thus, overall contact frequency was undoubtedly greater than 6.3 contacts per month. This measure of services provided was well within the range reported for the three states.

Finally, in a recent review of insanity acquittees and rearrest, Harris² found “a very strong direct linear relationship between length of follow-up and rearrest rate,” but did not closely examine the rate of hospitalization among acquittees.² If the results of this study were plotted onto Harris’ graph of percentage of acquittees rearrested versus years of follow-up, the outcome of this study (4.8% arrested over 5.0 years maximum follow-up) would be well below the best-fit line. The success of the ACT team, then, was that the primary clinical outcome was hospitalization, not arrest.

Discussion

The ACT treatment team was effective in monitoring NGRI acquittees on CR. The main outcome of this study, based on 83 acquittees who were on CR in the community over the course of the five-year study, was mean community tenure of 83 percent. The difference between potential and actual time in the community was entirely accounted for by hospitalizations for violation of CR, as none of the acquittees spent appreciable time in jail or prison. Only five arrests occurred over the course of the study. The only arrests for violent behavior occurred when one acquittee resisted the deputies sent to return him to

the hospital. Given the high prevalence of violence in the acquittees' NGRI offenses, the ACT CR team was thus successful from a social and political perspective, as the safety of the public was maintained.

Statistically significant predictors of the outcome of hospitalization or arrest included the length of time on CR (a positive predictor) and a diagnosis of paranoid schizophrenia (a negative predictor), while an NGRI offense of murder was very nearly a significant negative predictor. The arrest EAR was distinctly lower and the hospitalization EAR was modestly lower than previously reported results for well-described statewide programs.

That the diagnosis of paranoid schizophrenia emerged as a negative predictor of hospitalization or arrest was a surprise, as was the finding that an NGRI offense of murder was nearly a statistically significant protective factor. Simple explanations for these findings are not readily discernible, particularly for the seeming protective value of a diagnosis of paranoid schizophrenia. All the acquittees, save one, were known to be psychotic at the time of the offense, and nearly all the study population had a diagnosis of a chronic psychotic disorder. Subtypes of schizophrenia have not been shown to have significantly different courses or outcomes, with regard to neurocognitive measures or functional level,^{29,30} and so it is not clear why this group of acquittees with paranoid schizophrenia had better outcomes than other acquittees. It is perhaps more intriguing that a diagnosis of bipolar disorder was not a significant predictor of outcome, as this diagnosis is generally considered to have a better prognosis than the psychotic disorders.

The strengths of this study include the use of a coherent treatment philosophy by a single, well-established treatment team, the size of the study population, and the length of the study period. In addition, the Cleveland CR program has a history of consistent financial support from the county mental health board, a good working relationship with the local state hospital, and a good reputation within the county criminal courts. The CR team was also based in a community mental health agency with significant experience working with forensic clients. The team benefited from a ready availability of mental health professionals with forensic experience, because of the presence of forensic training programs in the city. Other strengths include the accurate data on hospitalization, due to the requirement that acquit-

tees only be hospitalized in the state hospital and the "monopoly" on management of NGRI acquittees held by the CR program for the Cleveland area, which minimized the risk of selection bias.

Weaknesses of this study include the circumstances, discussed earlier, that led to the creation and success of this ACT team, as it may be difficult to replicate the factors that contributed to the success of this team. In particular, many areas may not find it practical to dedicate an ACT team just to NGRI acquittees, as many states either do not have many such acquittees, or do not have conditional release, or both. The results of this study suggest, however, that the ACT model may be a useful strategy to employ if an agency is responsible for the care of forensic clients, such as mentally ill offenders on probation or clients recently released from prison.

A significant weakness is the absence of a comparison or control group. Finding an adequate control group is always a challenge for a retrospective study, and the specialized nature of this program, as well as the court involvement, made it unfeasible to find a reasonable comparison group. The decision to use a defined time period, rather than a defined population, introduced the possibility of bias, as 30 acquittees were in the community on CR at the outset of the study, while the remainder entered the program over the course of the study. However, this group of 30 acquittees had rates of hospitalization and arrest, per acquittee per year, that were entirely in line with the rates for the remainder of the study group, which suggests that no significant bias was introduced by including these acquittees in the study (Table 8).

Another weakness of the study is its retrospective perspective, which is well known to increase the risk of observer bias. However, one of the main outcomes, hospitalization, was determined by team decision, not by any single individual, and ultimately required judicial review and authorization. The other main outcome, arrest, was entirely beyond the control of the treatment team. The risk of bias regarding the main outcomes was thus relatively low.

The database for this study was incomplete in some areas, as was described in the Methods section. In particular, data on prior arrests and hospitalizations were not complete. Based on the incomplete data regarding arrest for this study group, a history of prior arrest was not a predictor of hospitalization or arrest (Table 5). It is possible that the low prior arrest rate, relative to other studies on CR, contributed to

the low number of arrests while on CR, as a history of previous arrests is a clear risk factor for future arrest in the general population.³¹ However, whether this is true of NGRI acquittees is not entirely clear. Only one of the studies published in the past 10 years directly evaluated whether a prior arrest history was a risk factor for arrest while on CR. Tellefsen *et al.*²⁵ found that the number of prior arrests was one of five variables that contributed to a 74 percent correct prediction model in only one of the two populations of NGRI acquittees on CR that they studied.²⁵

Though relatively long, the mean NGRI LOS was not a contributor to the outcome of hospitalization or arrest, based on the multivariate analysis. The mean LOS of NGRI acquittees has historically been longer than that of civil inpatients, due to risk as well as to procedural problems. The hospital LOS for NGRI acquittees has generally been close to, if not longer than, the prison sentence for the NGRI offense.³² The relatively long LOS for this study group was probably because nearly all the acquittees had committed serious offenses. In addition, by Ohio statute, each acquittee went through multiple risk assessments, by clinicians and by the criminal court, prior to being granted CR. Based on the published results of the past 10 years, it is difficult to ascertain how much the relatively long LOS of the study group contributed to the low arrest rate while on CR. Callahan and Silver²⁷ also found that length of hospitalization prior to CR was not a significant predictor of conditional release from the hospital.

Previous studies have postulated an inverse relationship between hospitalization rate and arrest rate, but the results of the present study do not fully support that conclusion. Though the hospitalization EAR was higher than the arrest EAR, overall, this CR program had a very low arrest EAR and a low hospitalization EAR, when compared with previously reported results for statewide programs (Table 9). The EAR analysis was developed by Wiederanders *et al.*³ in their attempt to find a means to compare the results of disparate reports on conditional release outcomes. This method underestimates the impact of acquittees who are hospitalized more than once, but even if the EAR for this group was calculated based on the number of hospitalizations, and not the number of acquittees hospitalized, it still yields a result (21.3%) within the range of those in statewide studies.

It should be noted that Table 9 compares the outcomes in one program with statewide results. Although statewide programs typically have a central monitoring mechanism, the actual monitoring and treatment of NGRI acquittees on CR is generally provided by a variety of agencies and even individual providers. Thus, the results of most prior studies do not reflect one treatment model, but many. As an example, the California conditional release program (CONREP), which is highly standardized, provides its local services using a mixture of county authorities, contract agencies, and state-run programs.³³ The NGRI acquittees in California, Oregon, and New York that formed the basis of the Wiederanders *et al.*³ study were undoubtedly served by a variety of programs, with a range of efficacy, and so the comparison of the outcomes of a single ACT team to statewide results is perhaps unfair. Some of the programs in New York, California, or Oregon may have had outcomes superior to the results reported in this report. However, there are few published outcome studies on CR programs in the literature and they do not present sufficient data to allow calculation of community tenure or estimated annual rates of arrest or hospitalization. In their study, Kravitz and Kelly⁵ report mean duration of follow-up and number arrested and hospitalized, but the results include seven clients (of 43 total) who were hospitalized throughout the study. Neither the Cavanaugh and Wasyliv⁴ study nor the Bloom *et al.*⁶ report has any data on duration of follow-up. Lamb *et al.*⁷ provided a variety of data on time in the community and on CR, but no full data on duration of follow-up while on CR, as 18 of the 79 clients were released from CR at some point during the course of the study. As a result, at the present time, the most direct way to measure the ACT team's performance against an external benchmark is to compare this program's outcomes with statewide results.

Another theory regarding the efficacy of CR programs links improved outcomes to a higher frequency of contacts with clinical providers. The study CR program had a minimum monthly contact frequency (>6.3) that was within the range of the contact frequencies reported in California, New York, and Oregon (2.1–14.5).³ The lack of data on the frequency of substance abuse treatment contacts for ACT CR clients means that the true contact frequency for the ACT team is certainly at the high end of this spectrum. The results of the present study thus

lend support to the proposition that a significant investment of clinical resources is needed to achieve good outcomes among NGRI acquittees on CR. In particular, given the high prevalence of psychotic disorders in the study group, it could be argued that the ACT team achieved their outcomes by ensuring their clients' high compliance with their psychiatric medications. Medication compliance alone, though, does not ensure success, as many people respond only partially to medications, and even those who respond well may have relapses of their symptoms. In addition, the ACT team's clinical contacts are not just office based, but largely occur in the community, where the client lives and works. It should also be noted that the frequency of services alone may not be sufficient. The contact frequency for California CR clients, as reported in Wiederanders *et al.*,³ was quite high, but was associated with higher estimated annual rates of arrest and hospitalization than those achieved by the ACT team. The coordinated provision of high-frequency services by a multidisciplinary team is the hallmark of an effective ACT team and may have been an important factor in the success of this CR program.

Another factor to consider regarding the success of this CR program relative to previous reports is the availability of atypical antipsychotic medications. As discussed earlier, there has been little published in the area of CR of NGRI acquittees in the past 10 years and only two articles with new data have appeared in the past 5 years.^{5,26} Both clozapine and risperidone received Federal Drug Administration (FDA) approval for use prior to the start of this study (in 1989 and 1994, respectively) and olanzapine received FDA approval during the study, in 1996. The contribution of the atypical antipsychotic drugs to the treatment of psychotic disorders appeared to be dramatic, due to their different side effect profile. Only clozapine, among all available antipsychotics, has been demonstrated to be effective in the management of treatment-resistant schizophrenia, and it reduces symptoms more than typical antipsychotic drugs.³⁴ As a group, use of the atypical antipsychotic medications results in lower relapse rates than use of typical antipsychotics.³⁵ In addition, there is substantial evidence that clozapine has specific antiaggressive properties, and there is growing support for the use of olanzapine and risperidone in aggressive patients.^{36,37} Since many acquittees in the study

group were on an atypical antipsychotic drug during the study, it is possible that the use of atypical antipsychotic medications contributed to the positive outcomes of this study, relative to studies done prior to the introduction of the atypical antipsychotics. A detailed analysis of the use of antipsychotic medications in this population will be addressed in a subsequent study.

Conclusion

The ACT treatment model was effective in the clinical management of NGRI acquittees on CR in the community. The team achieved outcomes of a low arrest rate, moderate hospitalization rate, and high community tenure. Length of time on conditional release and a diagnosis of paranoid schizophrenia were significant predictors of the outcome of hospitalization or arrest while on CR.

Bloom and Williams¹ argued, in their 1994 monograph on the management and treatment of insanity acquittees, that conditional release should be the national model "for all state forensic programs charged with the responsibility of caring for insanity acquittees." Because CR had been found to be effective in preventing arrest, they thought that CR could allow states to balance the liberty interests of NGRI acquittees and the security interests of the general public. The prediction of dangerousness, despite extensive and ongoing research, continues to be a difficult task. Almost all NGRI acquittees, by definition, are at risk of future violence, given their history of mental illness and criminal offenses, often violent in nature. The ACT CR team described in this study fits well into the Bloom and Williams description of the components of an effective CR program: it provided close monitoring by a well-integrated team of clinicians who had a solid working relationship with the local criminal courts and the state hospital. Since close monitoring by an integrated team is the hallmark of the ACT treatment model, ACT may be a potential best practice for ensuring public safety while providing sound clinical care for NGRI acquittees on CR in the community.

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