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## Effect of Conditional Release From Hospitalization on Mortality Risk

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### Abstract

**Objectives:** This study considered the protective value provided by conditional release. It assessed the contribution of conditional release to mortality risk among patients with mental disorders severe enough to require psychiatric hospitalization during a mental health treatment span of 13.5 years in Victoria, Australia.

**Methods:** Death records were obtained from the Australian National Death Index for a sample of 24,973 Victorian Psychiatric Case Register patients with a history of psychiatric hospitalizations: 8,879 had experienced at least one conditional release during community care intervals and 16,094 had not. Risk of death was assessed with standardized mortality ratios of the general population of Victoria. Relative risk of death among patients with and without past experience of conditional release was computed with risk and odds ratios. The contribution of conditional release to mortality, taking into account use of community care services, age, gender, inpatient experience, and diagnosis, as well as other controls, was assessed with logistic regression.

**Results:** Patients who had been hospitalized showed higher mortality risk than the general population. Sixteen percent (4,034) died. Patients exposed to conditional release, however, had a 14 percent reduction in probability of noninjury-related death and a 24 percent reduction per day on orders in the probability of death from injury compared with those not offered such oversight throughout their mental health treatment, all other factors taken into account.

**Conclusions:** Conditional release can offer protective oversight for those considered dangerous to self or others and appears to reduce mortality risk among those with disorders severe enough to require psychiatric hospitalization.

Population research has consistently shown increased mortality and morbidity among persons with severe mental illness (1–8). Reduced risks of negative outcomes have been associated with increased supervision or oversight (9–11). Civil commitment was, and continues to be, a means to provide protection and oversight for people with serious mental illness. Although civil commitment is widespread in Western societies (12), recently much controversy has been raised regarding the use of involuntary outpatient commitment, some viewing it as a means to provide protective oversight (9,13,14) and others viewing it as a

significant intrusion on civil liberties (15). This study investigates the relationship between the use of conditional release and mortality rates among hospitalized patients in Victoria, Australia.

In Victoria, Australia, the term used for an outpatient commitment order is a community treatment order. An order is issued for people with mental illness who require immediate treatment for their own health or safety or for community protection (16) (for a fuller description of community treatment orders, see the box in the companion article in this issue [17]). During the 1990s Victoria proceeded to rapidly deinstitutionalize its psychiatric hospital population, relying to a significant extent on these orders to deliver involuntary care and protective oversight in the community (18).

Orders may be issued as a means of facilitating early release from the hospital or directly from the community as a means of preventing hospitalization. The former is usually referred to as a conditional release. In Victoria 92 percent of a total of 16,568 such commitments were initiated from hospitals, that is, were conditional releases. We thus refer to the impact of conditional release orders, although the Victorian system allows for issuance of orders directly from the community, and they are so issued when deemed necessary. Because the standards for inpatient commitment are identical to those required for a community treatment order, people actively posing a danger to self or others or a threat to health and safety are released from the protective oversight of the hospital into the community and offered community-based oversight in lieu of hospital admission.

A reasonable concern is whether the strategy involving conditional hospital release or prevention of admission placed people with serious mental illness at increased risk of adverse outcomes, one being increased mortality. Alternatively, community treatment orders offer protective oversight to patients whose mental health treatment involves cycling in and out of hospitalization. Such orders may ensure that while in the community, between episodes of acute care, these individuals have the oversight necessary to prevent untimely death.

A recent account noted that “compared with long-term hospitalization, imprisonment or homelessness, outpatient orders were considered by virtually all patients to be less restrictive. Typical comments included: ‘It’s more beneficial than an in-patient order’; ‘It’s better to be in the community than in hospital, there’s much more freedom’ ” (19).

It appears that conditional release, if it provides sufficient oversight to prevent adverse outcomes, might be an acceptable, less restrictive alternative to hospitalization.

This study evaluated the relative risk of mortality among individuals with symptoms severe enough to require psychiatric hospitalization. We compared patients conditionally released from hospitalization with patients unconditionally released from hospitalization. We investigated mortality risk by comparing deaths over a period of 13.5 years among all hospitalized patients who had and had not been conditionally released.

## Methods

### Samples

The Victorian Psychiatric Case Register (VPCR) provides a record of all clinical contacts and their character occurring within the state of Victoria, Australia. The “conditional release” group comprised 8,879 patients who had experienced a conditional release between November 12, 1990, and June 30, 2000—a period when all mental health service utilization and community treatment orders could be reliably mapped with the VPCR.

The “no conditional release” comparison group comprised two subsamples, equally sized, of patients who had been hospitalized without the experience of conditional release, for a total of 16,094 patients. One subsample was matched on age, gender, and diagnosis to the conditional release group. The other subsample was randomly drawn (not matched) from the pool of individuals who had been hospitalized but had not experienced conditional release. Given that we obtained similar multivariate modeling results for the two subsamples, in the subsequent analyses we combined the two subsamples to form one comparison group with no experience of conditional release.

An additional sample of 18,483 patients was drawn from the entire VPCR (including both hospitalized and nonhospitalized cases) for estimating propensity scores for hospitalization and assignment of outpatient orders. Again, there were two subsamples, one matched and the other randomly selected. Both subsamples were combined in the subsequent development of propensity scores.

With approvals from the Victorian Department of Human Services and the Australian Institute of Health and Welfare and their ethics committees, a list of all VPCR sample members (identified by name, sex, and date of birth) was matched by Australian Institute staff with the Australian National Death Index, a compilation of all deaths throughout Australia. After identities of patients were masked, details regarding date, cause, and location of death were provided to us. After removal of probable duplications and names with low-probability matches, the list was used to represent people with mental illnesses in the VPCR samples who died during the index study period of November 12, 1990, to May 31, 2004.

### Design and analyses

The study first compared the mortality risk of VPCR individuals with disorders severe enough to require psychiatric hospitalization with the mortality risk of the general population of Victoria in order to establish the validity of the group’s need for protective oversight. Standardized mortality ratios (SMRs) used in the comparison were based on the Victorian population’s deaths reported by age and gender in 1999 (20).

The mortality risk associated with conditional release was assessed by first comparing the relative risk of death for VPCR patients with a history of hospitalization with versus those without conditional release experience. The analysis compared the expected age- and gender-adjusted mortality of those in the conditional release group with their expected

mortality, assuming the group had the same age and gender distribution as the nonconditional release patients, using SMRs and years of life lost to current life expectancy.

Logistic regression was then used to analyze the contribution of conditional release to noninjury-related mortality risk and death from injury (that is, *ICD-9E* codes including accidents, homicide, suicide, and other unexplained causes) (21). We accounted for treatment days per community care episode and adjusted for gender, age, age at entry into the mental health system, diagnoses (schizophrenia, major affective disorder, paranoia and other psychoses, and dementia and other disorders of the nervous system), total number of inpatient days (a control for the protective character of hospitalization in a patient's treatment), time in study, and propensity to be selected into the conditional release sample with a history of hospitalizations. Membership in the conditional release group was entered in the models, and the group without conditional release experience was the contrast.

The effect of the duration of conditional release per 30 days at risk of death (in other words, the number of days from first placement on orders to the end of the study or death) was evaluated in separate logistic models that included only the conditional release group and the same control variables. Only patients with a history of hospitalization were included in these analyses because conditional release was used with only this VPCR subpopulation.

Given the possible alternative outcomes, all model tests were two-tailed. All treatment contacts were organized into episodes of care: each continuous period of community provision without a contact break of at least 90 days was considered a community care episode. A contact break followed by resumption of community care was considered the start of a new community care episode. All occasions of community service are reported as community treatment days; multiple occasions of community service on the same day counted as one community treatment day. Intensity of service provision in the community was measured by treatment days per community care episode.

To deal with the problem of selection in comparing the groups with a history of hospitalization and conditional release experience or no experience, we developed a propensity score for selection to outpatient orders and hospitalization using the independent sample of all VPCR patients (N=18,483). The score is based on social and premorbid characteristics that distinguished conditional release patients with a history of hospitalization from other patients in the Victorian mental health system (17).

All analyses were completed with SPSS statistical package version 13 (22) and Excel spreadsheet software (23). Excel was used for computing SMRs, years of life lost, and relative risk statistics (24). Univariate descriptive statistics are presented and differences by inspection were discussed to avoid redundant statistical testing. Statistical tests for group differences were used for the multivariate models.

## Results

The mean±SD age of the total cohort with a history of hospitalization (N=24,973) was 44.2±18.3 years. Of the total, 13,936 (56 percent) were men and 11,037 (44 percent) were women. Compared with the group with no conditional release experience, the conditional

release group had more men (conditional release, 5,275 men, or 59 percent; no conditional release, 3,604 men, or 54 percent) and was approximately three years younger ( $42.4 \pm 16.3$  years for 8,874 conditionally released patients compared with  $45.2 \pm 19.2$  years for 16,094 patients with no conditional release). Table 1 presents the diagnostic and service use and cultural background characteristics of the samples.

Death was frequent among patients with a history of psychiatric hospitalization: 4,034 patients died (16 percent) over the 13.5-year span, 343 (9 percent) of whom had an injury-related cause of death.

Given the age- and gender-specific death rates for the state of Victoria, the SMR in the VPCR for individuals with disorders severe enough to experience psychiatric hospitalization was 1.11: 1.23 for men and .97 for women. The expected number of deaths was 3,645, indicating an excess of deaths of 389 during the period, or 28.8 deaths per year.

Table 2 reports the relative risk (RR) of conditional release experience as the ratio of the proportion of deaths among patients conditionally released relative to the proportion of deaths among patients without such experience. Relative risk (RR) of death among the conditional release group was lower than that of the non-conditional release group ( $RR=.75$ ).

Given the age- and gender-specific death rates for the group with no experience of conditional release, the SMR for conditionally released patients was .96: 1.09 for men and .81 for women. The conditional release group had 52 fewer deaths than expected; among men there was an excess of 60 deaths during the 13.5 years of study, whereas among women there were 112 fewer deaths than expected. Also, the difference in years of life lost from life expectancy between the groups with and without conditional release experience was 709 years, favoring conditional release. For the men, the loss was 1,902 years, whereas for women, 2,611 years were saved (gained).

The logistic regression models including the control factors specified previously were all significant ( $p < .001$ ). The results of the models that tested the contribution of conditional release (Table 3) indicated that after taking account of group differences, conditional release was likely to reduce mortality risk by 14 percent in contrast with no conditional release, but this result was not significant in contributing to the reduction in injury-related deaths. Community treatment days per community care episode was significant in reducing risk in both models, with approximately three days of service reducing mortality risk by 1 percent and each day of service reducing risk of injury-related death by 2 percent.

To ensure that results were not obtained from collapsing the two (random and matched) samples with a history of hospitalization but no conditional release into a single group, the model was rerun with the two subsamples with no conditional release experience as predictors and the conditional release sample as the contrast. Both subsamples without conditional release experience were significantly associated with increased mortality risk in the rerun model, and the significance of other characteristics was not modified. Thus the more parsimonious model is presented and the discussion confined to comparing those hospitalized and given conditional release with the combined hospitalized sample with no conditional release experience. The results of the models testing the effect of the of days of

conditional release per 30 days at risk of death (Table 4) indicate that for each such day on orders there was, respectively, a 4 percent reduction in the risk of noninjury-related death and a 24 percent reduction in the risk of death from injury.

## Discussion

The analyses considered over a 13.5-year period the mortality of VPCR patients with disorders severe enough to require psychiatric hospitalization during the course of their treatment. As a group such individuals were at increased risk of mortality when compared with the population of Victoria, a fact that seems to validate the need for protective oversight.

In examining conditional release as a form of protective oversight relative to those without such oversight in their mental health treatment, we found proportionally fewer deaths among those conditionally released than among those without conditional release experience (13 percent versus 18 percent). Given all factors controlled for in the analyses, which included the protective oversight provided by the hospital that both groups shared, the results indicate that conditional release oversight contributed to a 14 percent reduction in risk of noninjury-related death. Oversight associated with outpatient commitment days per 30 days at risk contributed to a 24 percent reduction per day in risk of injury-related deaths.

To explain these results requires consideration of the nature of protective oversight that patients received between intervals of hospitalization, when such individuals resided in the community. Given that the analyses took into account the amount of inpatient care that patients received, there are two possible additions to their community experience. First, although all individuals were eligible for mental health care, the outpatient order may have brought priority out-reach to this group—a frequent observation reported by clinicians and some patients and validated by the receipt of more service days per community care episode by conditionally released patients. Second, in addition to treatment days, the conditional release group received oversight from a Mental Health Review Board that considered patients in their situation within eight weeks of conditional release and either at a mandatory 12-month review or on request of a psychiatrist, attorney, or board member. On a monthly basis, face-to-face contact was required to validate involuntary status. The process, to some extent, kept attention on these patients and prevented them to a greater extent than patients without orders from falling through the cracks in the system.

Both of these experiences are illustrated by the reports of conditionally released patients: A woman in her 40s with a diagnosis of schizophrenia likened conditional release to “an umbrella over someone that is mentally ill. ... It gives them the opportunity of getting help. ... You can get in quick. You don’t feel like you are still floating. There are no loopholes. I can get help straight away.” A 33-year-old man with a long history of contact with mental health services and homelessness said, “[Conditional release] saved my life. It got me off the streets. It helped me communicate with people.” A 60-year-old with a diagnosis of major depressive disorder said, “I was pretty much into self-harm and attempting suicide. I don’t think I would be here now if I wasn’t on [conditional release]” (19).

The comments of such patients show not only how oversight protection works for them but also the extent of the often continuous and episodic danger they pose to themselves in their actions. The latter observation is supported by reports of excess morbidity among people with serious mental illness and reports of their inaction in seeking adequate health care (25)—problems leading to death that seem better addressed by the general oversight of an outpatient order as opposed to the infrequently occurring events documented in injury-related deaths. The significance of oversight duration (more days on orders per 30 days at risk) in reducing the risk of injury-related deaths indicates that reducing the risks of such events requires more extended coverage.

Although the definition of “adequate care” is often stakeholder specific, an argument can be made that conditional release is unnecessary if “adequate” voluntary care is available—the additional oversight protection with conditional release would be unnecessary because these high-risk patients under such circumstances would always receive attention. Given the history of public mental health services, however, unless there is a special status accorded such community-based patients, as in conditional release, such continuous oversight is less likely to be forthcoming. It is unclear whether such a status needs to be involuntary in nature, however. What this status amounts to in current practice in most jurisdictions is the ability to bring a person back to a psychiatric hospital for observation, with further detention contingent on confirmation that the patient’s mental state meets the conditional release standard. Still, there are significant numbers of patients with orders who believe that the order is stigmatizing, deprives them of their autonomy, and generally coerces their cooperation (19).

In Victoria, patients with community treatment orders are primarily selected by virtue of a progressive process of being at risk of long-term hospitalization. Each episode of care in which they are hospitalized for longer than average increases their probability of selection to the conditional release group (17). These patients remain at significant risk and require extensive oversight protection because they continue to be a danger to themselves and possibly others and pose a threat throughout their lives. Conditional release apparently has allowed for oversight protection to be offered in congruence with the principle of offering such care in the least restrictive alternative to the hospital.

These results raise at least two philosophical issues and two questions for future research. Considering the philosophical issues, first, although the death rates for psychiatric patients are in fact elevated in comparison with those of the general population, one could question whether they are elevated enough to justify involuntary oversight. Alternatively, one could argue that the reason why they are not higher is that this population has received such involuntary oversight. Second, civil libertarians see outpatient commitment as an invasion of privacy that should be allowed only for the most severe cases. These results, however, may suggest that failure to use conditional release in less severe cases can be viewed as withholding an intervention that saves lives.

The first research question requiring further exploration is related to the apparent differential response of men and women to protective oversight. At least some of the difference between men and women in years of life lost may be accounted for by the fact that although the same

proportion of injury-related deaths occurred in the groups with and without conditional release experience, men on orders (97 of 119 men, or 82 percent) were significantly more likely to die than men not on orders (154 of 224 men, or 69 percent) ( $\chi^2=6.45$ ,  $df=1$ ,  $p=.011$ )—their deaths contributing to the greater number of years of life lost for men.

This finding still leaves an observed rate differential, however. We might speculate that women may adapt better to the dependent situation of conditional release and thus benefit most from its oversight—for example, they may benefit from the receipt of better health care because of such oversight. The strong effect of each additional day per 30 on orders in preventing injury-related deaths may be indirectly related to this observation. Those on orders who survived spent more days per 30 on orders (ten versus two days) despite having an equivalent number of conditional releases (approximately two). Because gender was unrelated to spending more days on orders, more research is needed to understand how patients adapt to conditional release and to determine the factors related to order duration.

Conclusions herein apply to Victoria, Australia, and its health and welfare context. The data do not offer access to patient health or health services information or disease exposure, nor do they include specific information on the nature of the oversight that conditionally released patients actually received from their Mental Health Review Boards and how this interacted with treatment strategy. One also needs to be careful because analyses used administrative data—although these data represent perhaps the best in this category of information, they suffer from all the validity problems associated with such collections. Finally, problems of assessing mortality risk in comparison with the general population have been noted in the research literature on this topic (26). Given all of these issues, however, the results seem to support the use of conditional release as an alternative to hospitalization, indicating that involuntary care outside of hospitalization for patients deemed to be dangerous to themselves or to others may contribute to reduced mortality risk among those at risk of hospitalization.

## Conclusions

Patients with mental disorders severe enough to require hospitalization were found to be at increased risk of mortality in comparison with the general population in Victoria, Australia, and as such may benefit from oversight protection accorded by conditional release. Given that conditionally released patients showed a 14 percent reduction in their probability of death compared with those not offered such oversight throughout their mental health treatment, it seems that conditional release offers a less restrictive alternative than hospitalization as a means of providing oversight for patients who, as their commitment status indicates, continue to pose a danger to themselves or others and a threat to their own health and safety.

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**Table 1**

Diagnostic service and cultural background characteristics of psychiatric patients with a history of hospitalization who have or have not received orders for conditional release

Characteristic	Patients with a history of hospitalization (N=24,973)		Patients ever conditionally released (N=8,879)		Patients not conditionally released (N = 16,094)	
	N	%	N	%	N	%
Age at entry to mental health system (M±SD) <sup>a</sup>	36.5±18.9		33.3±17.2		38.3±19.6	
Diagnosis						
Dementia or other nervous system disorder	2,333	9	872	10	1,681	10
Schizophrenia disorder	14,634	59	6,911	78	7,723	48
Paranoia and acute psychotic disorder	616	2	194	2	422	3
Major affective disorder	3,279	13	628	7	2,651	17
Other disorder	4,111	16	274	3	3,617	22
Lifetime inpatient days (M±SD)	96.3±265.7		131.1±282.0		77.0±254.3	
Treatment days per community care episode (M±SD) <sup>b</sup>	27.9±46.5		35.6±44.9		23.0±46.8	
Country of birth <sup>c</sup>						
Australia	18,530	74	6,453	73	12,077	75
English-speaking background	1,543	6	480	5	1,063	7
Non-English-speaking background	4,339	17	1,820	21	2,519	16
Unknown	561	2	126	1	435	3

<sup>a</sup>Information on age was unavailable for five patients in this subgroup.

<sup>b</sup>Data were available for 22,368 patients: 8,878 with conditional release experience and 13,590 without conditional release experience.

<sup>c</sup>Information on race and ethnicity was not available.

**Table 2**

Exposure to conditional release and mortality over 13.5 years among psychiatric patients with a history of hospitalization<sup>a</sup>

Group	N	Deaths	Crude death rate	Deaths per 1,000	Relative risk of death <sup>b</sup>	95% CI	OR	95% CI	$\chi^2$ <sup>c</sup>
All hospitalized patients	24,973								
Conditional release experience	8,879	1,178	.133	132.67	.75	.71-.80	.71	.66-.76	84.74
No conditional release experience	16,094	2,856	.177	177.46	1.00				
Hospitalized patient group									
Men	13,936	2,321	.167	166.55	.73	.70-.79	.69	.62-.75	60.22
Women	11,037	1,713	.155	155.21	.77	.70-.85	.73	.65-.82	27.98
Schizophrenia	14,634	1,586	.108	108.38	.93	.85-1.01	.92	.83-1.02	2.55
Major affective disorder	3,279	535	.163	163.16	.74	.59-.92	.70	.55-.91	7.28
Paranoia and other psychosis	616	152	.247	246.75	.97	.70-1.34	.97	.65-1.43	.03
Dementia or other nervous system disorders	2,333	1,183	.507	507.07	.66	.59-.72	.46	.38-.55	69.92

<sup>a</sup>Reported differences are statistically significant when the confidence interval values do not include the value of 1.

<sup>b</sup>For relative risk, the reference group is those with no conditional release experience.

<sup>c</sup>df=1

Results of logistic regression models of predictors of death over 13.5 years among 24,973 psychiatric patients with a history of hospitalization

Table 3

Variable	Noninjury-related death <sup>a</sup>			Death from injury <sup>b</sup>				
	B	SE	p	B	SE	p		
Conditionally released sample	-.15	.05	.003	.86	.20	.14	.140	1.22
Treatment days per community care episode	.00	.00	<.001	.9965	-.02	.00	<.001	.98
Gender (male=2, female=1)	.63	.05	<.001	1.88	.88	.14	<.001	2.41
Age	.05	.05	.359	1.05	-.02	.14	.899	.98
Age at first contact with the mental health system	.02	.05	.763	1.02	.01	.14	.927	1.01
Schizophrenia	-.41	.08	<.001	.66	.38	.22	.080	1.47
Major affective disorder	-.18	.08	.034	.84	.08	.23	.724	1.09
Dementia	.56	.09	<.001	1.75	-.24	.31	.442	.79
Paranoia and other psychoses	.09	.14	.533	1.09	.69	.34	.040	2.00
Lifetime inpatient days	.00	.00	.054	1.00	.00	.00	.334	1.00
Propensity toward hospitalization and conditional release	.75	.16	<.001	2.11	-.78	.45	.087	.46
Time from first contact with the mental health system to the end of the study	.00	.00	.712	1.00	.00	.00	.753	1.00

<sup>a</sup>When noninjury-related death was the dependent variable,  $\chi^2=4,480.16$ ,  $df=12$ ,  $p<.001$ ; N for regression=22,036; correct classification=88.5 percent.

<sup>b</sup>When death from injury was the dependent variable,  $\chi^2=154.20$ ,  $df=12$ ,  $p<.001$ ; N for regression=22,336, correct classification= 98.7 percent.

Results of logistic regression models of predictors of death per 30 days at risk of death among 8,879 psychiatric patients with a history of hospitalization

Table 4

Variable	Noninjury-related death <sup>a</sup>			Death from injury <sup>b</sup>				
	B	SE	p	Exp(B)	SE	p	Exp(B)	
Outpatient commitment days per 30 days at risk	-.04	.01	<.001	.96	-.27	.04	<.001	.76
Treatment days per community care episode	.00	.00	.026	1.00	-.02	.01	<.001	.98
Gender (male=2, female=1)	.57	.08	<.001	1.76	1.20	.25	<.001	3.33
Age	.05	.09	.609	1.05	-.17	.23	.461	.84
Age at first contact with the mental   health system	.01	.09	.881	1.01	.16	.23	.489	1.18
Schizophrenia	-.51	.16	.001	.60	-.06	.38	.875	.94
Major affective disorder	-.64	.20	.001	.53	-.11	.44	.806	.90
Dementia	.19	.18	.285	1.21	-.62	.54	.252	.54
Paranoia and other psychosis	-.18	.25	.454	.83	.24	.57	.672	1.27
Lifetime inpatient days	.00	.00	.095	1.00	-.00	.00	.145	1.00
Propensity toward hospitalization and conditional release	.60	.21	.005	1.82	-.57	.58	.322	.56
Time from first date in mental health system to end of study in days	.00	.00	.904	1.00	.00	.00	.421	1.00

<sup>a</sup>When noninjury-related death was the dependent variable,  $\chi^2=1,160.06$ ,  $df=12$ ,  $p<.001$ ; N for regression=8,647; correct classification=89.3 percent.

<sup>b</sup>When death from injury was the dependent variable,  $\chi^2=233.60$ ,  $df=12$ ,  $p<.001$ ; N for regression=8,765; correct classification=98.7 percent.