Is The Effect of Compulsory Community Treatment on Preventable Deaths From Physical Disorders Mediated by Better Access to Specialized Medical Procedures?

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Objectives: Compulsory community treatment has been shown to reduce preventable deaths from physical disorders—these causes being up to 10 times more common than suicide in psychiatric patients. We investigated whether this was mediated by better access to specialized medical procedures.

Method: All patients on compulsory community treatment for over 11 years were compared with matched control subjects using linked administrative health data from Western Australia (state population of about 2.24 million). Outcomes were access to revascularization and other specialized procedures at 1-, 2-, and 3-year follow-up. Logistic regression was used to adjust for demographics, prior health service use, diagnosis, and length of psychiatric history.

Results: There were 2757 patients and 2687 control subjects (total n = 5444). Sixty-five per cent were males (n = 3522), and the average age was 36 years (SD 13.2). Most had schizophrenia or other nonaffective psychoses (74%), followed by affective disorders (26%). At 2-year follow-up, 2% (n = 53) of patients and 2.6% (n = 69) of control subjects had undergone a specialized intervention. Compulsory community treatment did not result in greater access to specialized procedures at all 3 time points even after adjusting for potential confounders.

Conclusions: Greater access to specialized procedures does not explain the reduced mortality from preventable physical illness that had been reported in patients on community treatment orders. There must be other explanations for this finding, such as mental health staff facilitating access to chronic disease management in primary care. This warrants further research.

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L'effet du traitement obligatoire en milieu communautaire sur les décès évitables de maladies physiques est-il favorisé par un meilleur accès aux procédures médicales spécialisées?

Objectifs : Le traitement obligatoire en milieu communautaire s'est révélé réduire les décès évitables de maladies physiques, lesquels étant jusqu'à 10 fois plus fréquents que le suicide chez les patients psychiatriques. Nous avons recherché si cela était favorisé par un meilleur accès aux procédures médicales spécialisées.

Méthode : Tous les patients soumis à un traitement obligatoire en milieu communautaire pendant plus de 11 ans ont été comparés avec des sujets témoins appariés à l'aide des données conjointes de santé et administratives d'Australie-Occidentale (population de quelque 2,24 millions). Les résultats étaient l'accès à la revascularisation et à d'autres procédures spécialisées aux suivis de 1, 2 et 3 ans. La régression logistique a servi à ajuster les données démographiques, l'utilisation précédente des services de santé, le diagnostic, et la durée des antécédents psychiatriques.

Résultats : Il y avait 2 757 patients et 2 687 sujets témoins (total n = 5 444). Soixante-cinq pour cent étaient des hommes (*n* = 3 522) et l'âge moyen était de 36 ans (ET 13,2). La plupart souffraient de schizophrénie ou d'autres psychoses non affectives (74 %), suivies de troubles affectifs (26 %). Au suivi de 2 ans, 2 % (*n* = 53) des patients et 2,6 % (n = 69) des sujets témoins avaient subi une intervention spécialisée. Le traitement obligatoire en milieu communautaire n'a pas donné un meilleur accès aux procédures spécialisées à tous les 3 points chronologiques, même après ajustement pour des facteurs de confusion éventuels.

Conclusions : L'accès accru aux procédures spécialisées n'explique pas la mortalité réduite des maladies physiques évitables qui avait été rapportée chez des patients soumis à un traitement obligatoire en milieu communautaire. Il doit y avoir une autre explication pour ce résultat, comme le personnel de la santé mentale qui facilite l'accès au traitement des maladies chroniques dans les soins de première ligne. Cela justifie plus de recherche.

Psychiatric patients have higher mortality rates than the general population, with chronic physical disorders, such as cardiovascular disease and cancer, being the main cause.[1] Rates are up to 10-fold those of suicide.[1,2] As a result, patients with schizophrenia die 15 to 20 years earlier than the general population, with this differential increasing over time.[2,3] Reasons include poverty, medication side effects, and reduced access to physical health care, such as specialized or revascularization procedures, including in Canada.[4,5]

Our previous paper from Western Australia demonstrated that CTOs may reduce preventable deaths from physical disorders, such as cancer or cardiovascular disease, at 1-, 2-, and 3-year follow-up.[6] There is a similar finding from Victoria, Australia.[7] One explanation is that increased contact with mental health clinicians might allow the identification and management of comorbid physical illness. This is consistent with our finding that the effect on mortality was attenuated after adjusting for outpatient contacts following CTO placement.

We therefore assessed the impact of CTOs on access to procedures at 1-, 2-, and 3-year follow-up.

Australian CTOs are of similar duration to Canadian ones, and are clinician, rather than court, ordered, as in the United States.[8] They cannot initially exceed 3 months but are extendable to 6 months, after which a new order is required. Unlike Canadian patients, Australian patients can be placed on CTOs without having been previously hospitalized. In practice, patients in both countries have similar bed days prior to their CTO.[9]

Method

We investigated whether the effect of CTOs on preventable deaths from physical disorders was mediated by better access to specialized medical procedures. The design was a

Abbreviations

AOR	adjusted odds ratio
CTO	community treatment order
HMDS	Hospital Morbidity Data System
SMI	severe mental illness

Clinical Implications

- Compulsory community treatment may reduce preventable deaths from physical disorders. This research shows it is not through improved access to specialized medical procedures.

- Increased contact with mental heath clinicians might provide opportunities for the identification and management of comorbid physical illness in other ways. These might include facilitating access to chronic disease management in primary care, or managing the side effects of psychotropics known to increase the risk of chronic disease.

- A focus on blood pressure measurement or blood tests, with appropriate subsequent pharmacotherapy, might be more effective than concentrating on more specialized interventions.

Limitations

- The sample's average age might be younger than the age most people would undergo these procedures. However, given that chronic physical illness reduces the life expectancy of people with SMI up to 20 years, it is possible that the age when these procedures would be indicated might also be correspondingly younger.

- The use of administrative data means there may have been confounders for which we could not adjust.

population-based, record-linkage analysis of all CTO cases in Western Australia in the 11 years since their introduction in 1997. We used the state's data linkage system, including the Mental Health Information System of psychiatric inpatient, outpatient, and community contacts, the Mental Health Review Board database of compulsory psychiatric treatment, and the HMDS.[10] The HMDS covered all inpatient treatment, psychiatric and nonpsychiatric.

We used the same sample as the previous study[6] that reported a reduced mortality from physical illness in CTO cases. Everyone placed on a CTO from 1997 to 2008 was compared with control subjects not on CTOs. The primary outcome was access to the following specialized or revascularization procedures at 2-year follow-up: endoscopy, colonoscopy, cardiac catheterization, percutaneous transluminal coronary angioplasty, and coronary artery bypass graft or arterial implant. These were chosen as they have been extensively studied in terms of disparities in access for psychiatric and

other marginalized patients.[4,5,11–14] They may also influence mortality in psychiatric and other patients.[11,12,15,16] We chose 2 years as it may be difficult to attribute any effect to a CTO beyond that, while allowing sufficient time to detect any effect on specialized procedures.[17,18] However, we undertook sensitivity analyses of follow-up at 12 and 36 months, the latter being the maximum interval for which data were available for the whole sample. These 3 time intervals also coincided with those in our earlier comparison of mortality in CTO patients and control subjects.[6]

We used matching, multivariate, and propensity score techniques to consider sociodemographic factors, clinical features, and previous health service use. We adjusted for psychiatric service use prior to both CTO implementation in 1997, and CTO index date, in terms of psychiatric admissions (especially involuntary), bed days, and outpatient contacts.

We selected an inception cohort of everyone placed on an initial CTO, previous work indicating that around 85% of CTOs occurred on discharge from hospital.[9] The study began from the implementation of CTOs in November 1997. We selected the same number of control subjects matched by age, sex, psychiatric diagnosis, and date of hospital discharge, the index date. In the small number of community placements, CTO commencement was the index date used for matching. We excluded any patients whose specialized procedure occurred before their index date.

We used logistic regression to adjust for confounders for which we did not match. These included sociodemographic characteristics in addition to age and sex, as well as health service use in the year prior to CTOs. Stays in psychiatric and nonpsychiatric units were assessed separately. We also adjusted for the year of CTO placement in case clinicians were targeting CTOs more effectively with greater experience. Patients and control subjects were regarded as independent, as there was no reason to believe that their outcomes were correlated in any way.[19]

We reran the model replacing health service use in the year prior to CTO placement with health service use prior to CTO implementation in 1997.

Results

We identified 2958 CTO patients from November 1997 to December 2008 along with the same number of control subjects successfully matched by age, sex, and psychiatric diagnosis. Matching was successful in that there were no significant differences in age, sex, or diagnosis. CTO patients were more likely to have been always single and born outside Australia.[6] They were less likely to be engaged in work, study, or home duties, or to have been admitted for nonpsychiatric reasons, a measure of physical comorbidity.[6] CTO patients had greater overall health service use in both the year prior to CTO placement, and to the implementation of CTOs in 1997.[6] There were no other differences, including length of psychiatric history prior to CTO.[6]

Among the sample, 472 underwent a specialized procedure occurring before their index date and so were excluded. This left 2757 patients and 2687 control subjects (total $n = 5444$); 65% were males ($n = 3522$) and the average age was 36 years (SD 13.2). Most had schizophrenia or other nonaffective psychoses (74%), followed by affective disorders (26%). We dichotomized the number of procedures around ever having had a procedure as the data were skewed (Kolmogorov-Smirnov statistic = 0.50, $P < 0.001$).

At 2-year follow-up, 1.9% ($n = 53$) of patients and 2.6% ($n = 69$) of control subjects had undergone at least 1 specialized intervention. Among these, the commonest were procedures involving the gastrointestinal tract, such as colonoscopy ($n = 73$) and endoscopy ($n = 66$). Cardiac procedures were much rarer ($n = 14$), the commonest being coronary angiography ($n = 7$) and cardiac catheterization ($n = 5$). Table 1 shows the odds ratios of having had at least one procedure adjusted for all variables. Older patients and those with previous admissions for medical, as opposed to psychiatric, reasons were more likely to have undergone a procedure. Otherwise, no other sociodemographic, clinical, or health service variables were associated with the likelihood of having a procedure. This included CTO status.

CTO placement had no effect on the likelihood of a procedure for the 72 patients who had at least 1 in the year following placement (AOR 0.70; 95% CI 0.37 to 1.15), or the 178 who had 1 by 3-year follow-up (AOR 0.96; 95% CI 0.66 to 1.39).

The results were the same when we considered procedures by category or when restricting the sample to patients placed on a CTO on hospital discharge, as opposed to community commitment. We also found similar results using propensity score analysis (AOR 1.03; 95% CI 0.70 to 1.52) and when we adjusted for health service use prior to the introduction of CTOs in 1997 (AOR 0.89; 95% CI 0.58 to 1.38).

Discussion

Better access to specialist procedures, possibly through increased contact with mental health clinicians, did not explain the reduced mortality we previously reported in CTO cases.[6] Our results may have implications for countries with similar clinician-initiated orders, such as Canada and Great Britain.[8,20] Specialist mental health systems in Canada and Australia also share similarities in organization and access to services or medication with little or minimal copayments, especially for patients with SMI.[21]

One explanation for our findings might be the sample's average age of 36 years. This might be younger than the age most people would undergo these procedures. However, this is unlikely to be the sole explanation. First, patients were no younger than psychiatric patients in previous Western Australian work, not just those on CTOs, where mortality from preventable physical illnesses was higher, but access to the appropriate specialized or revascularization procedure lower.[22] Second, given that chronic physical illness reduces the life expectancy of people with SMI by up to 20 years,[2,3]

Table 1 Predictors of specialized procedures at 2-year follow-up[a]						
	No procedures n = 5322		Any procedures n = 122			
Predictor	n	%	n	%	AOR	95% CI
Age, >34 years	2564	48.2	92	75.4	2.64[b]	1.65 to 4.24
Always single	3473	65.3	57	46.7	0.85	0.56 to 1.29
Male sex	3464	65.1	58	47.5	0.70	0.47 to 1.03
Tertiary education	398	7.5	11	9.0	1.08	0.57 to 2.06
Work, study, or home duties	4235	79.6	98	80.3	0.73	0.45 to 1.19
Country of birth outside Australia	1322	24.8	38	31.1	1.12	0.74 to 1.69
Aboriginal or Torres Strait status	541	10.2	6	4.9	0.53	0.23 to 1.24
Rural residence	525	9.9	17	13.9	1.42	0.82 to 2.44
Schizophrenia	3974	74.7	79	64.8	0.74	0.50 to 1.10
CTO patient	2704	50.8	53	43.4	0.91	0.59 to 1.43
At least 1 involuntary inpatient admission in the year prior to CTO placement	3888	73.1	74	60.7	0.68	0.43 to 1.07
Pre-index psychiatric bed-days, >30	2647	49.7	59	48.4	0.96	0.65 to 1.43
Pre-index psychiatric outpatient contacts, ≥12	2682	50.4	57	46.7	0.95	0.65 to 1.39
Nonpsychiatric admissions, >1	3232	60.7	98	80.3	2.37[b]	1.49 to 3.77
Psychiatric symptom duration, >5 years	2490	46.8	67	54.9	0.90	0.61 to 1.33
[a] Model adjusted for all variables, as well as year of CTO placement						
[b] P < 0.001						

it is therefore possible that the age when these procedures would be indicated might also be correspondingly younger.

Limitations include the relative rarity of procedures and the presence of other confounders for which we could not adjust, and which could explain why some patients, and not others, were on CTOs. These include poor insight, social disability, and medication. However, any bias should be in the direction of CTO patients being more ill than control subjects, which may be why they were placed on CTOs in the first place. It would not explain why all-cause mortality in the same sample was lower in patients than control subjects despite possibly being more severely ill.[6] Another limitation is that our data had no information on other less intensive, but more common, interventions, such as blood tests, antihypertensives, or statins. Finally, propensity score analysis was still limited by the possibility of unknown confounders.[23]

In conclusion, there must be other explanations for the reduced mortality in these CTO patients, such as mental health staff facilitating access to chronic disease management in primary care. Interventions might include increased screening through blood pressure measurement or blood tests, with appropriate subsequent pharmacotherapy.

Acknowledgements

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