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The utility of outpatient commitment: acute medical care access and protecting health

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Abstract

Objectives—This study considers whether, in an easy access single-payer health care system, patients placed on outpatient commitment—community treatment orders (CTOs) in Victoria Australia—are more likely to access acute medical care addressing physical illness than voluntary patients with and without severe mental illness.

Method—For years 2000 to 2010, the study compared acute medical care access of 27,585 severely mentally ill psychiatrically hospitalized patients (11,424 with and 16,161 without CTO exposure) and 12,229 never psychiatrically hospitalized outpatients (individuals with less morbidity risk as they were not considered to have severe mental illness). Logistic regression was used to determine the influence of the CTO on the likelihood of receiving a diagnosis of physical illness requiring acute care.

Results—Validating their shared and elevated morbidity risk, 53% of each hospitalized cohort accessed acute care compared to 32% of outpatients during the decade. While not under mental health system supervision, however, the likelihood that a CTO patient would receive a physical illness diagnosis was 31% lower than for non-CTO patients, and no different from lower morbidity-risk outpatients without severe mental illness. While, under mental health system supervision, the likelihood that CTO patients would receive a physical illness diagnosis was 40% greater than non-CTO patients and 5.02 times more likely than outpatients were. Each CTO episode was associated with a 4.6% increase in the likelihood of a member of the CTO group receiving a diagnosis.

Conclusion—Mental health system involvement and CTO supervision appeared to facilitate access to physical health care in acute care settings for patients with severe mental illness, a group that has, in the past, been subject to excess morbidity and mortality.

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Conflict of interest

The authors have no conflicts of interest related to the use or interpretation of the study results.

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Keywords

Outpatient commitment; Community treatment orders; Medical care access for the severely mentally ill; Physical illness morbidity among psychiatric patients; Civil commitment law

Background and significance

Outpatient commitment, community treatment orders (CTOs) in Victoria, Australia, require patient participation in community-based treatment in lieu of involuntary psychiatric hospitalization. A central tenet of the law is the assumption that people in need of treatment to protect their health are refusing or failing to access such treatment due to their mental illness [1]. A validation of this assumption is found in the elevated morbidity and mortality experienced by people with severe mental illness (SMI), most notably those who have experienced psychiatric hospitalization [2–9]. The conclusion that people with SMI require involuntary care to remedy this situation, however, is questioned by findings, indicating that they often lack access to care [9] and the assertion that they would access treatment voluntarily if it were available and effective [10, 11]. The single-payer health care system in Victoria, Australia that provides highly accessible medical treatment, then, is an excellent context in which to test this assertion.

While there is general agreement that people with SMI are at higher risk for physical illness, there is also considerable variance in morbidity-risk elevation across categories of disorder as well as within disorder types. For example, while cancer studies have had varied results (higher, no difference, or reduced risk associated with SMI), very good evidence of increased morbidity exists for stroke, myocardial infarction, hypertension, and other cardiac and vascular diseases, though relative risk estimates vary from 1.2 to 3.3 for cerebrovascular disease and from two- to fourfold for cardiovascular disease [9]. That people with SMI often experience socioeconomic disadvantage and neglect their health is also commonly understood and validated by findings indicating that they are anywhere from 3.9 to 54% more likely to exhibit an increased frequency of cardiovascular risk factors commonly considered modifiable in the general population in different geographic areas. These risk factors include smoking, poor diet, lack of exercise, excessive alcohol intake, obesity, diabetes, and dyslipidaemia, the cluster of abnormal clinical and metabolic findings defining the metabolic syndrome (MetS) [12]. Yet, such neglect, socioeconomic disadvantage, or other biological differences, do not appear to fully explain the increased morbidity or mortality risk, or the variance in risk estimates experienced by people with SMI [12].

Reduced risks of negative mortality and morbidity outcomes for people with SMI have been associated with increased supervision by mental health system personnel [13–15]. The CTO is designed to ensure supervision and treatment for individuals who, without such supervision and treatment, would likely be unable to take responsibility for their own acutely needed physical and mental health care and would be unable to live successfully in the community. The goal of the CTO is “...to increase access to the highest intensity services and to better engage [patients] in those services. An additional goal is to reduce the incidence of behaviors harmful to selves or others [16]”—herein threats to health that would

require acute care. The previous research in Victoria, Australia [17], replicated in Western Australia [18], demonstrated that CTOs may reduce preventable deaths. CTO assignment in Victoria has been associated with reduced mortality risk when accompanied by increased medical care access [19]. One explanation of this finding is that increased contact with mental health clinicians might facilitate better identification and management of comorbid physical illness. There is considerable evidence of restricted access to physical health care provision for psychiatric patients [20]. Findings in Victoria [17] and Western Australia [18] indicate that the CTO's influence on reduced mortality is attenuated after adjusting for outpatient contacts following CTO placement; these could be consistent with a possible positive impact of mental health supervision on medical care access. This is especially true in that patients with severe mental illness are dying 10–30 years earlier than those without such illness and a majority of their excess deaths are due to physical illness [7, 21]. This study seeks to establish the link between the CTO (i.e., involuntary supervised mental health care) and access to acute-level medical care (i.e., to contacts with emergency and inpatient general medicine leading to a diagnosis of a major potentially and imminently life-threatening physical illness). The study examines the role of the CTO in the protection of health for individuals with severe mental illness.

Case management of people with severe mental illness involves supervising lives of individuals who periodically engage in behavior, due to their mental illness, that poses an imminent threat to their own health and safety. Mental health supervision is generally offered in the form of professional advice, acceptance of which is a voluntary decision made by the patient. Patients under CTO supervision, however, may be required by law to have a physical examination especially when there is a belief that their physical health is being imminently threatened due to their mental illness. In Victoria, voluntary psychiatric inpatients or outpatients have the same rights as any member of the community to consent to or refuse non-psychiatric treatment. This, however, does not apply to involuntary CTO patients if such non-psychiatric treatment (including though not limited to anesthetics, any surgery carried out under anesthetic, radiotherapy, and chemotherapy) "...is urgently required to save [their] life, or to prevent serious damage to [their] health or significant pain or distress [22, p 31]." (See Online Appendix Section A, online, detailing the law's provisions). The study hypothesizes that while outside of mental health system supervision, those selected for a CTO are less likely to have their physical health care needs requiring hospital or emergency room care addressed and that under system supervision, especially CTO supervision, they will be more likely to be diagnosed with an acute potentially life-threatening physical illness in such settings.

Methods

Sample

Mental health records for the years 2000–2010 were obtained from the Victorian Psychiatric Case Register (VPCR)/RAPID system, which records all mental health contacts in Victoria Australia. This study considers patient utilization of acute medical care during periods, while a patient is under mental health system supervision—i.e., receiving in- or outpatient care from a mental health provider voluntarily or by legal mandate—and while outside such

supervision. It considers the utilization of acute medical care among three groups: (1) all 11,424 patients with SMI who had experienced psychiatric hospitalization and a first-time CTO placement—patients believed to be in need of involuntary supervision. (2) 16,161 psychiatrically hospitalized patients with SMI who never experienced CTO exposure—those patients with SMI believed voluntarily able to participate in treatment and able to address their own imminent threats to health. (3) 12,229 mental health outpatients who were never psychiatrically hospitalized or placed on a CTO—individuals less likely to have SMI and who had been observed to have had lower morbidity risk for physical illness [20]. Patients in the hospitalized-non-CTO and outpatient cohorts were matched with the CTO cohort on age, gender, and diagnosis (to the extent possible) and otherwise randomly selected (see Appendix online, Section B, 2).

The mental health records of the three cohorts were linked to four other information sources: (1) the Victorian Emergency Minimum Dataset (VEMD), which consists of clinical episode data from the Emergency Departments of Victorian public hospitals; (2) the Victorian Admitted Episodes Dataset (VAED), which consists of clinical episode data for admitted episodes of care in Victorian medical hospitals; (3) the Australian Mental Health Outcomes and Classification Network's (AMHOCN) clinical quality-of-life assessments recorded via the Health of the Nation Outcome Scale (HoNOS), utilized in Australia's mental health systems; and (4) the Socio-Economic Indexes for Areas (SEIFA) records of neighborhood disadvantage. VEMD, VAED, and AMHOCN HoNOS assessments include information required of all patients receiving service. This information is collected by the service organization and must be reported to its governing body. SEIFA assessments apply to postal codes in Victoria (see Online Appendix Section B5b).

In documenting the patient's history of mental health treatment/supervision, all contacts with the mental health system (inpatient, voluntary outpatient community care, and CTO) were organized into episodes of care. Each psychiatric hospitalization (from day of admission to day of discharge) was considered a separate inpatient-episode. Each continuous period of outpatient care without a break in service for 90 days or more was considered a community-care episode [23]. A service break of 90 days or more followed by reinitiation of care was considered the start of a new community-care episode. Each CTO episode begins when a patient is placed on orders and ends when the order is terminated.

Each contact with a general hospital and/or emergency room for physical health issues was mapped into the patients' mental health history and the information recorded regarding receipt of physical illness diagnoses. These contacts were then categorized to indicate whether they occurred during a mental health care episode (inpatient and outpatient with and without accompanying CTO) or outside of contact with the mental health system. All medical contacts occurring during a mental health episode of any type were considered to have occurred under mental health supervision, when occurring outside of a mental health episode, medical contacts were considered to have occurred outside of mental health supervision.

Hypotheses

The CTO, aside from requiring a routine physical examination, is only empowered to compel care for “illness requiring immediate treatment”, acute medical care. In Australia, such care is provided in hospitals and emergency rooms, while routine care is available at modest or no cost from general practitioners [24]. Grounded in the previous research indicating that patients diagnosed with SMI experience higher morbidity than those without SMI [9], the study had five hypotheses. First, that access to acute medical care of the CTO and non-CTO cohorts will be more likely to exceed that of outpatients (in part validating the differential in morbidity risk between the cohorts with and the cohort without SMI). Second, that outside of mental health system supervision, individuals in the CTO cohort will be less likely to access acute medical care than individuals in the non-CTO-hospitalized cohort (confirming, in part, the assumption that the CTO cohort is voluntarily less willing or able to address acute-level health threats). Third, that when under mental health system supervision, the CTO cohort will be more likely to address or to have their acute-level health care needs addressed to the same degree as the non-CTO cohort (in part, validating their shared morbidity risk). Fourth, that the experience of each CTO will be associated with increases in the probability of accessing acute-level medical care—in part validating the utility of the CTO in protecting health.

No CTO legislation in the US, the UK, or Australia confines the use of CTOs to a specific diagnostic group—i.e., the law universally applies to behavioral disruptions that are consequent of “mental illness”. Yet, researchers have expressed concern about the generalizability of the Victoria experience given the inclusion of individuals with dementia and other nervous system disorders among those placed on CTOs in the State. Hypothesis 5 thus indicates that all the relationships hypothesized in 1–4 will be affirmed when these diagnostic groups are not included in the analyses.

Measurement and analyses

The unit of analysis is the individual. The primary dependent variables are the receipt of at least one diagnosis related to a major physical illness (i.e., since multiple diagnoses have greater likelihood of following a single one, the number of diagnoses seems less important than actually receiving a diagnosis). Comparisons are made as to whether a diagnosis was received within vs outside of a mental health care episode. The single acute-level medical contact is one leading to a medical diagnosis related to five conditions believed most likely to be imminently life-threatening: cancer, ischemia, cerebrovascular disorder, diabetes, and physical trauma (see Appendix online, Sections B 5a and, B6). All analyses are performed first considering all five medical conditions. Then, they are repeated for non-traumatic physical illnesses and for all patients without dementia and nervous system disorders. The analyses related to the non-traumatic physical illnesses are conducted to confirm that the focus is on physical illness and does not result from the fact that trauma may at times be related to unreported psychiatric illness.

All analyses were performed with SPSS version 23 [25]. Chi-square, ANOVA, and difference of proportions tests were used for descriptive evaluation of group differences. Four Logistic regressions were run to determine the relative risk of receipt of at least one

medical/physical illness diagnosis indicating health care need. Figure 1 outlines the structure of the models—two run for the period when patients were outside mental health supervision and two for when they were under mental health supervision. Given the three cohorts, the first of each of the two models contrasted the CTO and non-CTO cohorts against the experience of outpatients; the second contrasted the experience of the CTO and outpatient cohorts against the experience of the non-CTO cohort. Each of the four models was run three additional times to evaluate any changes in the pattern of risk that might have resulted from the inclusion of patients with dementia and other nervous system disorders (i.e., excluding these patients) and to determine the effect of including physical trauma diagnoses in the assessment (i.e., excluding such traumas from the dependent variable).

The CTO experience is also the cumulative experience of having one or more CTOs. As such, the logistic analyses were also conducted using the number of CTOs as the primary independent variable, thus, allowing for the evaluation of each additional CTO episode on the probability of receiving a medical/physical illness diagnosis.

All logistic regressions were evaluated after taking into account (giving explanatory priority to) 42 factors believed to impact the probability of receiving care beside CTO status, i.e., the propensity to be selected into the CTO cohort (based upon all potential control factors): age, gender, diagnoses (schizophrenia, paranoia/psychotic disorders, affective disorders, and dementia, with the reference category being other/or no diagnosis), time in the study, days under mental health supervision (or outside supervision in the models evaluating outside access), having had a contact outside the system (or inside when considering outside contacts), individual SES indicators (< 11th grade education, being outside of the labor force), neighborhood social disadvantage of the most disadvantaged area of patient residence (SEIFA rank) [26], cultural disparities (i.e., Aboriginal/Torres Strait Islander status, requiring an interpreter, preferring another language to English, being born outside of Australia), and a psychosocial profile, i.e., 12 clinically assessed HoNOS items describing an individual's worst psychosocial presentation at admission to and discharge from community treatment as evidenced by problems with: aggression; non-accidental self-injury; drinking or drug-taking; cognition; physical illness or disability; hallucinations and delusions; depressed mood; other mental and behavioral disorder; relationships; activities of daily living; living conditions; and occupation and/or activities (see Appendix online, Section B7 and B8).

Ethics

The project was approved by the University of California, Berkeley Institutional Review Board (IRB) and two Victorian Department of Health and Human Services (VDHHS) ethics committees—the equivalent of IRBs in the US. One VDHHS committee approval covered the mental health data and one added the hospital and emergency room data to the approved study. The study complied with the data regulations set by all participating organizations; no data breaches or otherwise adverse events occurred during the course of the study.

Results

The average sample member ($N = 39,814$) was 39.1 ± 20 years of age, 56% were males, and 49% had never married. Forty-six percent were diagnosed with schizophrenia, 6% acute psychotic disorder, 10% major affective disorder, and 10% with dementia and other nervous system disorders. Thirty-six percent had less than an 11th grade education and 51% were unemployed on entry to the study cohort (see Table 1). The three groups were statistically different on all demographic and social descriptors and so these variables were used in the generation of a propensity score adjusting for between group differences associated with selecting people into the CTO cohort; a score that was used as a control for such differences in the multivariate models. The two hospitalized groups are more similar in accord with the matching procedures, but the CTO group presented the poorest premorbid profile: 53% never married; 68% unemployed; 33% < 11th grade education, and 72% with schizophrenia. The non-CTO-hospitalized-cohort was: 46% never married, 54% unemployed, 31% < 11th grade education, and 62% with schizophrenia. The outpatient cohort was most different; validating its members had non-severe mental illness, it had only 0.2% diagnosed with schizophrenia, 10% with major affective disorder, 50% with diagnoses not generally associated with severe mental illness, and 28% with unspecified diagnoses, perhaps resulting from not fully meeting the severity standards of any condition.

Diagnostic access is reported in Table 2: 47% ($N = 18,617$) had access to at least one physical illness diagnosis and 47% ($N = 18,616$) to at least one non-traumatic physical diagnosis. Both the CTO and non-CTO cohorts had a significantly greater proportion of their members experiencing access to a physical illness and non-traumatic physical illness diagnosis than the outpatient cohort ($Z = 33.62$, and $Z = 33.67$, respectively, $p < 0.001$), but did not differ significantly from each other on this diagnostic experience.

Figure 2 shows the hypothesized and actually observed CTO cohort's relative risks of obtaining an acute medical diagnosis for all the medical conditions included in the study, both in and outside of mental health supervision when contrasted with the two other cohorts. The hypothesized risks come from assuming that patients with SMI have at least 1.5 times the risk of experiencing a medical condition, compared to outpatients (i.e., this being the lower end of the risk range reported in the literature [9]). They were actually 1.69 times more likely to experience a condition than were the outpatient cohort. The results on observed risks reported in Fig. 2 are from the first group of models, numbered "1" in Table 3, derived from the first four Logistic Models labeled Section 1 a–d. Results from repeating the models without physical trauma diagnoses and excluding patients with dementia and other nervous system disorders are shown in section 2–4 of Table 3, and show no change in the pattern of findings. Unless otherwise noted, all models are significant at $p < 0.001$; CTO, non-CTO, and outpatient variable $EXP(b)$ coefficients are significant in all models at $p < 0.001$. The contrast group is varied between the non-CTO and the outpatient cohorts for each model and all CTO effects are adjusted for the 42 controls noted above.

As noted in Table 3, the first set of four models considers the likelihood of having a medical contact leading to a diagnosis and the second set considers the likelihood of having a medical contact leading to a non-traumatic diagnosis.

Outside of mental health supervision, CTO patients were 31% less likely (all controls considered) than the non-CTO patients to have a medical contact (35% less likely exclusive of trauma contacts). CTO patients showed no statistically significant difference from outpatients in having a contact ($p = 0.149$); but were 17% less likely to have a contact exclusive of trauma.

With mental health supervision, CTO patients were 1.40 times more likely than the non-CTOs to have a medical contact (1.42 times more likely exclusive of trauma contacts). CTO patients were 5.02 times more likely than outpatients to have a medical contact (5.34 times more likely exclusive of trauma contacts).

Each additional CTO episode in the CTO cohort was associated with an approximate 4.5% increase in access to both a medical care diagnosis and a non-trauma medical care diagnosis, respectively, the models were significant at $p < 0.001$, with $\chi^2 = 25,144.37$, $df = 43$, $25,972$, $EXP(b) = 1.044$, $CV = 1.024-1.063$; and, $\chi^2 = 25,245.92$, $df = 43$, $25,972$, $EXP(b) = 1.046$, $CV = 1.027-1.066$. When the models were re-run without dementia and other nervous system disorder cases, each additional CTO episode increased access by 4.8% for all five physical illness diagnoses and 5.0% for the non-trauma diagnoses. Respectively, the models were significant at $p < 0.001$, with $\chi^2 = 9986.70$, $df = 42$, $23,019$, $EXP(b) = 1.048$, $CV = 1.024-1.063$; and, $\chi^2 = 25,245.92$, $df = 43$, $25,972$, $EXP(b) = 1.050$, $CV = 1.029-1.071$.

Discussion

The previous research indicates that people with SMI experience elevated morbidity risk of major physical illnesses [9]. Herein, hypothesis one was supported in that both hospitalized cohorts were found to have similar access to medical diagnosis for physical illness over the course of the study decade (53%) and had significantly greater access compared to the outpatient cohort (53 vs 32%)—thus validating to some extent their shared elevated morbidity risk.

This apparent equivalence of the cohorts with SMI, however, appeared to be facilitated by CTO supervision in that hypotheses two and three were supported. Hypothesis two results indicated that outside of mental health system supervision, individuals in the CTO cohort were 31% less likely than their non-CTO comparisons to access acute medical care and were not statistically different from the outpatients in accessing such care. These findings support, in part, the assumption that the CTO cohort is voluntarily less willing or able to address acute-level health threats. Additional support comes from the findings related to hypothesis three. The expectation under hypothesis three was that when under mental health supervision the CTO cohort would address their acute-level health care needs with the same probability as their non-CTO comparisons. The findings indicated that their probability of doing so was 1.40 times more likely than the non-CTO cohort, seemingly compensating for neglect outside of mental health supervision, and 5.02 times more likely than outpatients, validating the extent of their elevated morbidity not addressed outside supervision.

The role of the CTO in supporting increased access was supported by the findings affirming hypothesis four which indicated that the experience of each CTO was associated with a 4.5%

increased likelihood of accessing acute-level medical care. Australia has one of the most accessible health care systems in the world and thus people with SMI do not have to rely on acute care settings (as they do in the US) to obtain routine medical care. This is evident in the reduced probability of use of acute settings by the CTO cohort when outside of supervision and their increased probability of use under CTO supervision. These findings are, perhaps, a commentary on the voluntary priorities of the CTO population and the failures of the medical care system to adequately serve their needs. It is also a credit to the mental health system for apparently enabling medical care access during periods of mental health system supervision—access exceeding the non-CTO group and seemingly approaching expected need. In addition, the findings are robust and more generalizable in that, respectively, they were consistent and slightly strengthened when physical trauma contacts were removed from consideration and when individuals with dementia and other nervous system disorders were removed from the study cohorts.

The increased access to acute medical care by the CTO cohort is also consistent with the previous findings of increased use of mental health services by a CTO cohort (to a level equivalent to that of a non-CTO-hospitalized-patient-sample), while under CTO supervision—utilization levels that did not continue beyond the duration of the CTO episode [27]. Given the finding indicating that CTO patients stop using mental health treatment once the CTO has ended, we see continuing problems ahead for CTO patients outside of mental health contact. There is a need for more significant and sustained outreach efforts on the part of general medicine and mental health services to better engage and enable this population in efforts to address their own health needs. While there is “no health without mental health,” conversely, recovery is substantially hindered by unattended life-threatening illness.

The CTO is a delivery system that seems to improve acute health care access. These analyses show a significant impact of the mental health system and CTOs on the receipt of acute medical care. They show that voluntary utilization, or perhaps utilization without mental health system advocacy, is less likely—even in Australia’s highly accessible health care system—to produce access to acute health care among the people with SMI selected for CTO supervision. The CTO’s facilitation of acute medical care access could decrease the need for more costly medical services that are carried by the state in this single-payer healthcare system. This is an avenue for future research. Such research should also consider that the CTO’s positive effect is likely diminished in countries where outpatient commitment has no statutory provision for influencing access to medical care, or where such medical services are not available.

This research has limitations. It is based on administrative data, though the data are linked to reimbursement. Its analyses are correlational and do not confirm causation as might a true clinical trial. Patients were not matched on health status prior to the study, and while there is general agreement that morbidity risk of physical illness is elevated among people with SMI, there is considerable variation across conditions and in levels of estimated risk elevation within conditions. Yet, the study looks at an entire state population over a decade, employing multivariate methods and a quasi-experimental design. It includes comparison groups appropriate to a research situation where complete random assignment faces major ethical issues. A true randomized trial is not possible as the very definition that makes an individual

eligible for a CTO implies the individual is at risk, perhaps, due to their need for acute health care. This compromises randomness, since those believed at risk cannot participate in random assignment—i.e., be placed in a non-CTO group. Furthermore, the study considers acute medical care access while taking account of both individual and area indicators of socioeconomic disadvantage.

The limitations of this administrative data set, however, do reveal additional opportunities for future study. We unfortunately did not have access to prescription practices or information regarding the circumstances surrounding an acute admission. Continued investigations on the relationship between CTO assignment and medical care access should address the use of psychotropic medications and consider their potentially iatrogenic effects [28]. Although the CTO seems to have utility in the facilitation of acute medical services and in reducing mortality risk [19], the possibility that the need for such acute admissions occurs due to complications associated with mandated-medication-compliance questions the use of this provision of statutory law. Future research should explore in depth, with consumers and physicians, the factors leading to acute admissions of psychiatric patients both voluntarily and while under CTO supervision.

Conclusions

CTOs seem to be associated with improved acute health services access and as such may offer a potential point of focus for addressing excess morbidity and mortality in the population requiring such supervision, individuals who are less likely or able to address their major medical care need voluntarily. CTOs also, until an alternative intervention is discovered, appear to address some of the difficulties which the medical care system has in engaging people with severe mental illness.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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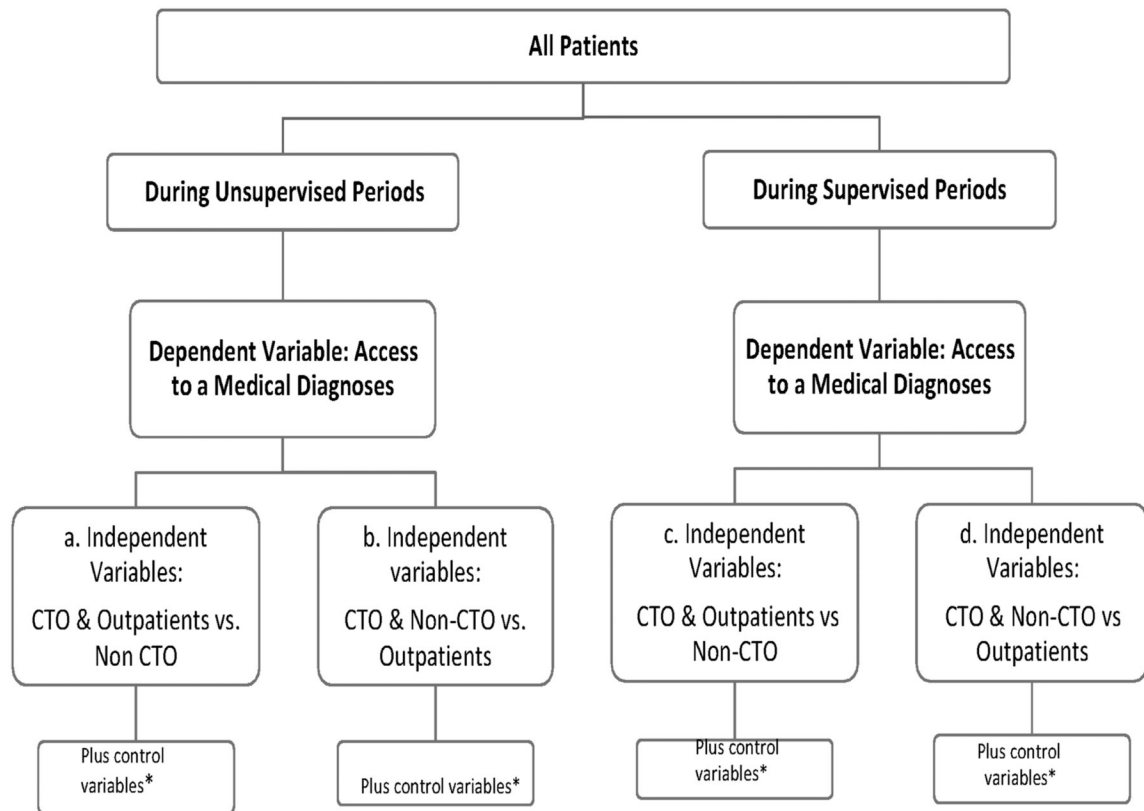


Fig. 1.

Risk model structure. *All models were adjusted for age, gender, diagnoses (schizophrenia, paranoia/psychotic disorders, and dementia with the reference category being other/or no diagnosis), time in the study, days under mental health supervision (or outside supervision in the models evaluating outside access), having had a contact outside the system (or inside when considering outside contacts), individual SES indicators (< 11th Grade education, being outside of the labor force), neighborhood social disadvantage of the most disadvantaged area of patient residence (SEIFA rank) (24), cultural disparities (i.e., Aboriginal/Torres Strait Islander status, requiring an interpreter, preferring another language to English, being born outside of Australia), the patient's psychosocial profile in community residence (i.e., 12 Health of the Nation Scale (HoNOS) items describing an individual worst psychosocial presentation at admission and 12 HoNOS items describing their psychosocial profile at discharge from community treatment), and a propensity score for selection to the CTO cohort

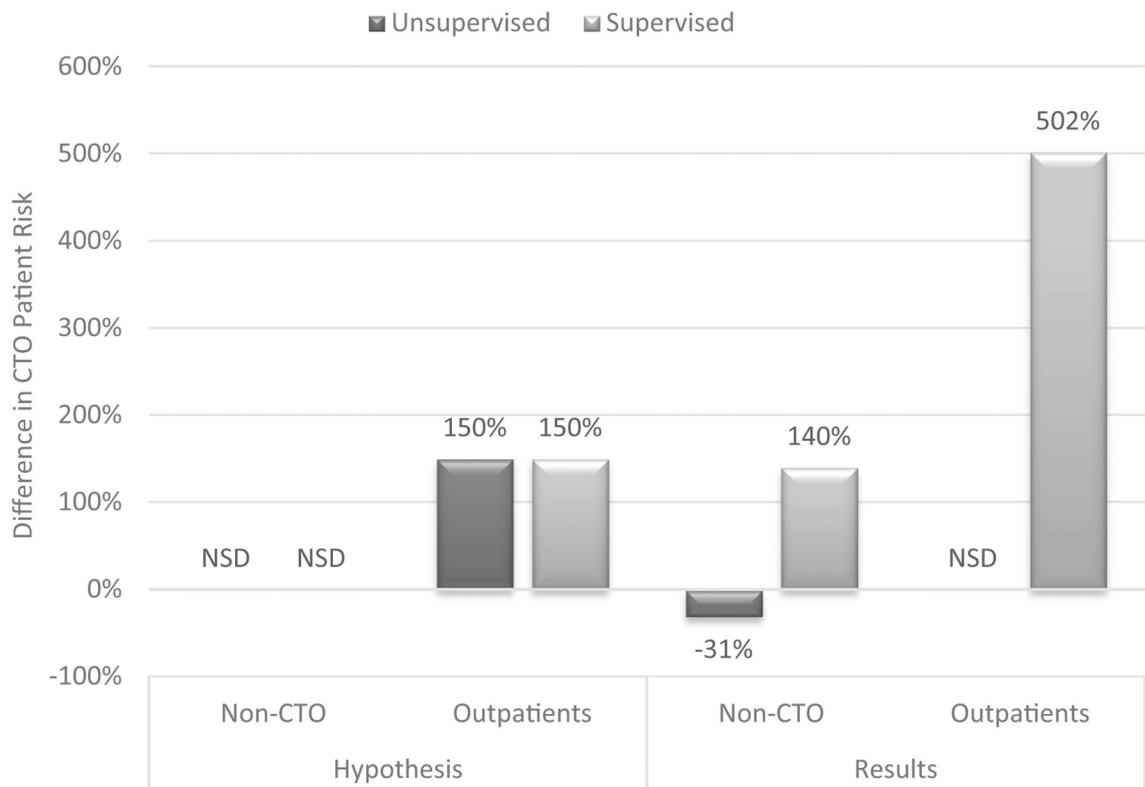


Fig. 2. Difference in CTO risk of obtaining a medical diagnosis vs comparison groups (it is hypothesized that all psychiatrically hospitalized patients with severe mental illness (SMI) are likely to have at least 1.5 times the risk of physical illness morbidity than never psychiatrically hospitalized outpatients without SMI—i.e., a lower end estimate of the risk range reported in the literature [9]). *NSD* no significant difference in risk of receiving an acute physical illness diagnosis

Table 1

Demographic, diagnostic, and medical care access characteristics

Cohort	Hospitalized, given CTO(N = 11,424)		Hospitalized, not given CTO(N = 16,161)		Outpatients (N = 12,229)		Total (N = 39,814)	
Variable	NIM	%	NIM	%	NIM	%	NIM	%
Demographics								
Age (M ± SD) at mid-study	38.7 ± 16.3		39.9 ± 17.9		38.6 ± 25.6		39.1 ± 20.0	
Gender								
Male	6646	58	8834	55	5799	47	21,279	56
Female	4776	42	7327	45	6428	53	18,531	44
Education: < 11th grade	3731	33	5075	31	5474	45	14,820	36
Unemployed	7817	68	8787	54	3787	31	16,600	51
Never married	6005	53	7405	46	5731	47	13,360	49
Diagnoses								
Schizophrenic disorder	8240	72	10,020	62	19	0.2	18,279	46
Paranoia and acute psychotic disorder	719	6	1438	9	249	2	2406	6
Major affective disorder	920	8	1840	11	1240	10	2757	10
Dementia or other nervous system disorder	1131	10	2036	13	1122	11	4147	10
Other disorders ^a	305	3	607	4	6116	50	7170	18
Unspecified ^b	109	1	220	1	3483	28	3812	10

^a Anxiety disorders, eating and obsessive compulsive disorders, other affective disorders, somatoform disorders, acute stress reaction, personality disorders, conduct disorders, and sexual disorders

^b Other undiagnosed and unspecified problems often failing to meet DSM criteria. Such conditions, including those under the category of "Other disorders" are less likely to be viewed as severe mental illness especially when the patient has never been psychiatrically hospitalized. They describe 78% of the outpatient sample

Ten year receipt of a physical diagnosis in an acute care setting

Table 2

Cohort Variable	Hospitalized, given CTO(N = 11,424)		Hospitalized, not given CTO (N = 16,161)		Outpatients (N = 12,229)		Total (N = 39,814)	
	N	%	N	%	N	%	N	%
Had at least one medical contact ^a								
Diagnosed as physical illness	6130	53.7	8606	53.3	3881	31.7	18,617	46.8
Diagnosed non-trauma physical illness	6127	53.6	8576	53.1	3832	31.3	18,535	46.6

^aInclusive of cancer, ischemic, cerebrovascular, diabetes, and physical trauma diagnoses

Table 3

CTO exposure during the study and the relative risk of receiving a medical diagnosis outside vs under mental health supervision

Medical contact	Outside mental health system supervision			Inside mental health system supervision		
	(a) CTO compared with hospitalized non-CTOs*	(b) CTO compared with outpatients*	95% CI	Exp <i>b</i>	95% CI	(d) CTO compared with outpatients*
Statistics	Exp (<i>b</i>)	95% CI	Exp (<i>b</i>)	95% CI	Exp (<i>b</i>)	95% CI
1. Medical/physical illness diagnosis (entire sample)						
CTO patients	0.69	0.60–0.80	0.88	0.73–1.05/NSD	1.40	1.31–1.50
Non-CTO	**	**	1.27	1.12–1.43	**	**
Outpatients	0.79	0.70–0.90	**	**	0.28	0.25–0.31
2. Non-trauma medical/physical illness diagnosis (entire sample)						
CTO patients	0.65	0.57–0.74	0.83	0.70–0.97	1.42	1.33–1.51
Non-CTO	**	**	1.27	1.13–1.44	**	**
Outpatients	0.79	0.69–0.89	**	**	0.26	0.24–0.30
3. Medical/physical illness diagnosis (sample excluding patients with dementia or other nervous system disorders)						
CTO patients	0.74	0.63–0.86	1.02	0.84–1.24/NS	1.42	1.32–1.52
Non-CTO	**	**	1.38	1.19–1.59	**	**
Outpatients	0.73	0.63–0.84	**	**	0.27	0.23–0.30
4. Non-trauma medical/physical illness diagnosis (sample excluding patients with dementia or other nervous system disorders)						
CTO patients	0.68	0.60–0.78	0.95	0.79–1.34/NS	1.43	1.34–1.53
Non-CTO	**	**	1.39	1.20–1.60	**	**
Outpatients	0.72	0.62–0.83	**	**	0.26	0.22–0.29

* All models are significant at $p < 0.001$; and, CTO, hospitalized non-CTO, and outpatient variable *b* coefficients are significant in all models at $p < 0.001$ excepting: the comparisons of medical contact/diagnosis of CTO vs Outpatients outside of mental health supervision for models including trauma contacts, these models were not significant. All models were adjusted for age, gender, diagnoses (schizophrenia, paranoia/psychotic disorders, affective disorders, and dementia, with the reference category being other/or no diagnosis), time in the study, days under mental health supervision (or outside supervision in the models evaluating outside access), having had a contact outside the system (or inside when considering outside contacts), individual SES indicators (< 11th grade education, being outside of the labor force), neighborhood social disadvantage of the most disadvantaged area of patient residence (SEIFA rank) (24), cultural disparities (i.e., Aboriginal/Torres Strait Islander status, requiring an interpreter, preferring another language to English, being born outside of Australia), the patient's psychosocial profile in community residence (i.e., 12 Health of the Nation Scale (HoNOS) items describing an individual worst psychosocial presentation at admission and 12 HoNOS items describing their psychosocial profile at discharge from community treatment), and a propensity score for selection to the CTO cohort

** Contrast group