



# The association between discontinuation of community treatment orders and outcomes in the 12-months following discharge from residential mental health rehabilitation

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## ABSTRACT

To compare the post-discharge outcomes of people admitted to community-based residential mental health rehabilitation facilities subject to a Community Treatment Order (CTO) who do and do not have this order discontinued prior to discharge.

People subject to a CTO who were admitted across five Community Care Units (CCUs) in Queensland, Australia between 2005 and 2014 ( $N = 311$ ), were grouped based on involuntary treatment status at the time of their discharge. Individuals whose status changed to voluntary ( $n = 63$ ; CTO > VOL) were compared with those whose treatment remained involuntary ( $n = 248$ ; CTO-CTO) on demographic, clinical and treatment-related characteristics. Group-level and individualised changes were assessed between the year pre-admission and the year post-discharge. The primary outcome measure was change in mental health and social functioning (Health of the Nation Outcome Scale). Secondary outcomes included disability (Life Skills Profile-16), service use, accommodation instability, and involuntary treatment. Logistic regression was completed to examine predictors of CTO discontinuation during CCU care. Potential predictors covered service-, consumer-, and treatment-related characteristics.

Compared to the CTO-CTO group, the CTO > VOL group had significantly longer episodes of CCU care, more frequent primary diagnoses of schizophrenia spectrum disorders, and were more likely to be female. Following discharge, CTO > VOL subjects had more frequent reliable and clinically significant improvement in HoNOS scores, as well as more frequently demonstrated reliable improvement in hospital bed use and accommodation instability than the CTO-CTO subjects. CTO discontinuation was predicted by longer duration of CCU care, being a female, and having a smaller number of psychiatry-related bed use prior admission.

Our findings suggest that CCU care of sufficient duration may lessen the need for subsequent compulsory treatment in the community.

## 1. Introduction

There has been increasing debate about the role of Community Treatment Orders (CTOs) in improving the outcomes for people affected by Severe and Persistent Mental Illness (SPMI) (Barnett et al., 2018; Brophy, Kokanović, Flore, McSherry, & Herrman, 2019; Gill et al., 2020; Kisely et al., 2017; Light, Kerridge, Ryan, & Robertson, 2012; Maughan, Molodynski, Rugkåsa, & Burns, 2014). These orders allow for the

involuntary treatment of a person diagnosed with a mental illness who is living in the community. Rates of CTO use in Australia are among the highest in the world (Light, 2019). Despite limited evidence of the effectiveness of CTOs (Light, 2019; Barnett et al., 2018; Kisely et al., 2017), some authors believe they are necessary for ensuring the safety of the person subject to the order and the community (Corring, O'Reilly, Sommerdyk, & Russell, 2018). Concern has also been expressed that the increasing use of CTOs may reflect clinicians' efforts to ensure access to

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care in an under-funded health system rather than the appropriateness of such restrictive treatment for the individual on whom it is imposed (Light et al., 2016).

One setting where people with SPMI in Australia are frequently subject to CTOs is in community-based residential rehabilitation units (Parker, Hopkins, et al., 2019; Parker, Siskind, et al., 2019). These are most commonly Community Care Units (CCUs). CCUs are publicly-funded psychiatric rehabilitation services that provide transitional care focused on improving the community functioning and independence of people affected by SPMI. Similar publicly-funded residential services for people with SPMI are available in the United Kingdom (Killaspy, Marston, Omar, et al., 2013). This is contrast to elsewhere where rehabilitation services are generally outpatient-based (Cohen, Edstrom, & Smith-Papke, 1995; Svetini et al., 1998; Tsang, Fung, & Chung, 2010).

During care at a CCU, an authorised doctor or the Mental Health Review Tribunal can discontinue a person's CTO if they cease to meet the legislated criteria for involuntary treatment (Mental Health Review Tribunal, 2016). In our recent CCU outcome study, cessation of involuntary treatment was considered a favourable outcome at a CCU due to this change in treatment being consistent with principles of recovery-oriented care (Parker et al., 2020). However, this study did not consider the impact of CTO discontinuation on subsequent psychiatric symptoms and mental health service use. Anecdotally, concern is often raised about the risks of discontinuing a consumer's CTO prior to discharge from a residential rehabilitation unit. Clinicians can worry that gains made in engagement and mental state in an intensively-supported residential care environment may be lost without the ability to provide assertive support facilitated by a CTO.

This study examined the relationship between changes in CTO status during residential rehabilitation care and outcomes in the year following discharge from a CCU. We investigated if there was a relationship between length of CCU stay, discontinuation of involuntary treatment on, or before, discharge (CTO > VOL) and subsequent mental health or social outcomes. We hypothesised that improvements made in the residential treatment setting would be maintained on the transition to less restrictive settings (Corrigan & Mueser, 2016; Ridgway & Zippel, 1990). We also explored the predictors of CTO discontinuation during CCU care and investigated if there was an association between duration of CCU residence and legal status on discharge.

## 2. Material and methods

### 2.1. Design and related data

We used retrospective administrative data of all CCU admissions in Queensland, Australia, between 2005 and 2014 who have been discharged for >28 days on 31/12/2014 (Parker et al., 2020). Ethical clearance was provided by Metro South Addiction and Mental Health Services Human Research Ethics Committee (HREC/15/QPAH/392).

### 2.2. Study context

CCUs provide transitional residential rehabilitation to people affected by SPMI who come from other public mental health settings (Parker et al., 2019a). While these services were developed based on concepts such as 'hospital in the home', they are clearly distinguished from inpatient mental health services by the absence of restrictions on the movement of residents in-and-out of the units and the accommodation features. Residents live in independent-living units arranged in a cluster-housing configuration that is located within the community (rather than being co-located with a hospital site). Clinical staff are available 24-h a day, and work with residents to enhance their independent living skills (e.g., cooking, cleaning, and budgeting) and community integration. Available therapeutic programs may include cognitive behaviour therapy, cognitive remediation, and social

cognitive interventions (Dark, Harris, Gore-Jones, Newman, & Whiteford, 2018). While people are often admitted on CTOs, the service model emphasises voluntary engagement with rehabilitation support and recovery-oriented care (Parker et al., 2016). The expected length of care is 6–24 months; however, an episode of care may also extend into longer-term.

At the time of data collection, the CTOs in Queensland were authorised by the Mental Health Act 2000 (Queensland) (Queensland Health, 2012). Under the provisions of this legislation, involuntary psychiatric treatment could be mandated by an authorised doctor if a person: (a) has a mental illness, (b) immediate treatment is required, (c) treatment is available at an authorised mental health service, (d) because of this illness there is an imminent risk of harm (to self or others) or likelihood of serious mental/physical deterioration, (e) no less restrictive way of ensuring appropriateness is available, and (f) the person lacks capacity to consent or has unreasonably refused the proposed treatment. Involuntary treatment was able to occur in both inpatient and community settings, and these orders were subject to periodic review by an independent tribunal (<6-weeks, then <6-monthly). The Act allowed for orders to be discontinued either based on the determination by an authorised doctor or by the independent tribunal that the relevant criteria were no longer met. The vast majority of involuntary treatment orders under this legislation were discontinued by authorised doctors rather than a decision of the tribunal (Queensland Health, 2014). For example, in 2015–2016, 35% of orders were revoked by clinicians prior to a tribunal hearing, and only 2% of all orders considered by a tribunal were revoked (Mental Health Review Tribunal, 2016).

### 2.3. Data collection

Administrative data for admissions to five CCU sites were collated from electronic health databases by the Queensland Health Data Linkage Unit. Pre-admission measures covered the 365 days before admission, and post-discharge measures the 365 days following discharge. Data included: demographic variables (age, gender, country of birth, identification as Aboriginal and Torres Strait Islander [ATSI], relationship status, education level, employment, and income source); diagnostic characteristics (primary and secondary diagnosis, and lesser/greater severity of clinical symptoms); and treatment-related variables (duration of CCU episode of care). The primary outcome of interest was mental health and social functioning (Health of the Nation Outcome Scale [HoNOS] (Wing et al., 1998)); secondary outcome considerations were disability (Life Skills Profile [LSP]-16 (Trauer, Duckmanton, & Chiu, 1995)), psychiatric service use (number of psychiatry-related bed-days and emergency department [ED] presentations), and accommodation instability (number of changes in primary residence). For the clinician-rated measures (HoNOS and LSP-16), the highest scores (i.e., the poorest functioning/disability) recorded in the pre-admission and post-discharge period were used. Change in CTO was determined by comparing status at admission and discharge from a CCU. No information was available in the data-set about the mode (i.e., authorised doctor or tribunal initiated) of, and reasons for, CTO discontinuation.

### 2.4. Data analysis

SPSS version 25.0 (SPSS, 2017) was used for all statistical analyses.

#### 1.4.1 Group differences

Using pooled data across the sites, individuals were divided into two groups: CTO > VOL (when involuntary treatment was discontinued on or before discharge) and a CTO-CTO group (those who remained on a CTO at the time of discharge). These two groups were compared on demographic, clinical and treatment-related characteristics, and outcome variables, using the Chi-Square test for nominal variables and *t*-

test for independent samples for continuous variables. Where the assumption of normality was violated, Mann-Whitney *U* test was applied for categorical variables and Wilcoxon Signed-rank test for continuous variables. Fisher's Exact test was applied to nominal variables where >80% of cells had an expected count  $\leq$  five (Field, 2013). Statistical significance was assessed at the level of  $p < .05$ .

#### 2.4.1. Outcomes

For outcome variables, reliable and clinically significant (RCS) change was assessed using the Jacobson & Truax (1991) method, following the procedures applied for calculating the reliable change index (RCI) and RCS detailed in Parker et al. (2020). Firstly, the RCI was calculated to determine whether individual score differences were statistically reliable (i.e., improvement or deterioration), using the Christensen and Mendoza (1986) formula:

$$RCI = \frac{\text{Post discharge score} - \text{Pre admission score}}{SE_{diff}}$$

$SE_{diff}$  being calculated as:

$$SE_{diff} = SD_1 * \sqrt{2 * \sqrt{(1 - \alpha)}},$$

where  $SD_1$  is the standard deviation of the total score pre-admission and  $\alpha$  is the Cronbach's coefficient of internal reliability of the outcome measure.

To assess RCS change, clinically significant change was first calculated, using three cut-off methods (Jacobson & Truax, 1991):

- Cut-off 1: >2 SDs from the dysfunctional population mean;
- Cut-off 2: <2 SDs of the functional population mean; and,
- Cut-off 3: Closer to the functional population than dysfunctional population mean.

RCS change was considered to have occurred when the difference between an individual's pre-admission and post-discharge scores exceeded the RCI and an individual's post-discharge score met any of the three cut-off criteria. RCS change was only calculable for the HoNOS measure, and functional population data to calculate this was derived from a study of 114 individuals residing in the community, accessing mental health services in New South Wales, Australia (Maxwell, Tsoutsoulis, Menon Tarur Padinjareveetil, Zivkovic, & Rogers, 2018). Three cut-offs were considered and the approach producing the largest proportion of improved participants was selected, consistent with the strategy used by Gonda, Deane, and Murugesan (2012). For the secondary outcome variables, only statistically reliable change could be calculated; RCS change could not be determined due to a lack of identifiable relevant functional population data, as well as the distributions of scores being too skewed (Jacobson, Wilson, & Tupper, 1988).

#### 2.5. Predictors of CTO discontinuation

Binary logistic regression was performed to examine predictors of CTO discontinuation during CCU care. The independent variables were selected based on the analysis of group differences and previous literature and included the following: duration of CCU care (days); age; sex; education; relationship status; income source; primary and secondary diagnosis; psychiatry-related (acute and non-acute) bed use 365 days before admission; and ED presentations 365 days before admission. Due to a large amount of missing data (28.9%), education was excluded from the prediction model, however, variables with <10% of missing cases were included. A simultaneous regression was used with all remaining independent variables entered in the model at the same time.

### 3. Results

#### 3.1. Participant characteristics

The sample included 501 subjects (349 male); the mean age for males was 35 years (SD = 12.50) and for females 36.9 years (SD = 12.75). The median duration of CCU episode of care was 154 days (range 0–2225). Most residents were subject to a CTO on admission ( $n = 311$ , 62.1%); of these, most remained subject to a CTO at discharge (CTO-CTO,  $n = 248$ ) and a minority had their CTO revoked during CCU care (CTO > VOL,  $n = 63$ ). Other residents were either voluntary at both admission and discharge ( $n = 178$ , 35.5%) or voluntary at admission but subject to a CTO at discharge ( $n = 7$ , 1.4%). Five individuals died within the 365-day period after discharge. Given the focus of the current study, subsequent analyses were conducted using only the 311 individuals who, at admission to a CCU, were subject to a CTO; the mean age for males ( $n = 222$ ) was 34.6 years (SD = 11.87) and for females 35.8 years (SD = 12.71). The median duration of CCU episode of care was 311.3 days (range 1–2225).

#### 3.2. Outcomes 12 months after discharge: Less restrictive vs. same-restrictive status

The comparisons between the CTO > VOL and CTO-CTO groups are detailed in Tables 1–3. Residents who were voluntary at the time of discharge stayed twice as long at the CCU (Table 1). Regarding other

**Table 1**

Comparison of socio-demographic characteristics of consumers subject to a CTO at admission and voluntary at discharge (CTO > VOL) and consumers subject to a CTO at admission and discharge (CTO-CTO).

	Total sample ( $n = 311$ )	CTO > VOL ( $n = 63$ )	CTO-CTO ( $n = 248$ )	Test statistic and $p$ -value
	N (%)	N (%)	N (%)	
<b>Demographics</b>				
Mean age at admission ( $\pm$ SD; years)	34.98 (12.11)	33.30 (11.74)	35.41 (12.18)	$F(1,309) = 1.528, p = .217$
Gender: male	222 (71.4%)	36 (57.1%)	186 (75.0%)	$\chi^2(1) = 7.842$ $p = .005^*$
Country of birth: Australia	275 (88.4%)	56 (88.9%)	219 (88.3%)	$\chi^2(1) = 0.017$ , $p = .897$
<b>Highest education level</b>				
Year 10 or less	129 (58.4%)	24 (57.2%)	105 (58.7%)	$H(1) = 0.011$ , $p = .915^c$
Year 12	64 (29.0%)	13 (31.0%)	51 (28.5%)	
Tertiary	28 (12.7%)	5 (11.9%) (12.8%)	23 (12.8%)	
<b>Relationship status</b>				
Never married	238 (77.3%)	46 (74.2%)	192 (78.0%)	$\chi^2(1) = 0.419$ , $p = .517$
Married <sup>a</sup>	70 (22.7%)	16 (25.8%)	54 (22.0%)	
<b>Income source</b>				
Disability pension	160 (51.8%)	33 (52.4%)	127 (51.6%)	$\chi^2(1) = 0.011$ , $p = .915$
Other <sup>b</sup>	149 (48.2%)	30 (47.6%)	119 (48.4%)	

Abbreviations: CTO=Community Treatment Order; SD=Standard Deviation; VOL = Voluntary treatment status; \*  $p < .05$ .

Missing data: Relationship status ( $n = 3$ ; 1.0%); Education ( $n = 90$ ; 28.9%); Income ( $n = 2$ ; 0.6%).

<sup>a</sup> Married includes consumers who were married ( $n = 27$ ; 8.8%), divorced/separated ( $n = 40$ ; 13.0%), and widowed ( $n = 3$ ; 1.0%).

<sup>b</sup> Other includes consumers receiving other governmental benefits ( $n = 131$ ; 42.4%), those with no income ( $n = 12$ ; 3.9%), and those receiving employment-related payments ( $n = 6$ ; 1.9%).

<sup>c</sup> Based on the increasing levels of education, Kruskal-Wallis test was applied to test the differences among groups on the highest education level.

**Table 2**

Comparison of treatment-related and clinical characteristics of consumers subject to CTO at admission and voluntary at discharge (CTO > VOL) and consumers subject to a CTO at admission and discharge (CTO-CTO).

	Total sample (n = 311)	CTO > VOL (n = 63)	CTO-CTO (n = 248)	Test statistic and p-value
	N (%)	N (%)	N (%)	
<b>Treatment</b>				
Mean duration of CCU care (range; days)	310.84 (1–2225)	509.51 (1–1370)	260.38 (1–2225)	F(1,309) = 26.084, p = .000**
<b>Diagnosis</b>				
Primary: F20-29.x Schizophrenia spectrum disorders	266 (86.1%)	48 (77.4%)	218 (88.3%)	$\chi^2(1) =$ 4.861, p = .027*
Secondary: Personality Disorder	48 (15.4%)	11 (17.5%)	37 (14.9%)	$\chi^2(1) =$ 0.249, p = .618
<b>Mild/greater severity of clinical symptoms (score <math>\geq</math> 2)</b>				
Overactive / aggressive behaviour (HoNOS item 1)	117 (56.8%)	23 (63.9%)	94 (55.3%)	$\chi^2(1) =$ 0.894, p = .344
Problem drinking or drug taking (HoNOS item 3)	71 (34.5%)	9 (25.0%)	62 (36.5%)	$\chi^2(1) =$ 1.731, p = .188
Cognitive problems (HoNOS item 4)	101 (49.0%)	19 (52.8%)	82 (48.2%)	$\chi^2(1) =$ 0.245, p = .620
Physical impairment (HoNOS item 5)	60 (29.1%)	7 (19.4%)	53 (31.2)	$\chi^2(1) =$ 1.981, p = .159
Psychotic symptoms (HoNOS item 6)	145 (70.4%)	27 (75.0%)	118 (69.4%)	$\chi^2(1) =$ 0.445, p = .505

**Abbreviations:** CCU=Community Care Unit; CTO=Community Treatment Order; HoNOS=Health of the Nation Outcome Scales; SD=Standard Deviation; VOL = Voluntary treatment status; \*  $p < .05$ ; \*\*  $p < .01$ .

**Missing data:** HoNOS (n = 105; 33.8%) and Primary diagnosis (n = 2; 0.6%).

demographic and clinical characteristics, the two groups differed significantly in sex (female sex being more frequent in the CTO > VOL group), and frequency of primary diagnoses of schizophrenia spectrum disorders (higher for CTO-CTO cases). RCS improvement in HoNOS scores occurred more frequently for CTO > VOL than for CTO-CTO residents. Similarly, reliable improvement occurred more frequently in the CTO > VOL than the CTO-CTO group in hospital bed use and accommodation instability. However, no differences were identified between the groups regarding the likelihood of reliable improvement in ED presentations.

### 3.3. Predictors of CTO discontinuation

Three significant predictors of CTO discontinuation during CCU care were identified (see Table 4): duration of CCU care (days,  $\beta = 1.003$ ,  $p = .000$ ); female sex ( $\beta = 2.390$ ,  $p = .007$ ); and hospital bed-use in the 365-days before admission (days,  $\beta = 0.994$ ,  $p = .000$ ). In addition, primary diagnosis of schizophrenia spectrum disorder was included in the final model given it was at the margin of statistical significance ( $\beta = 0.439$ ,  $p = .056$ ) and that this result may still imply clinical significance. The full model correctly classified 80.9% of residents (96.8% of those remaining on a CTO and 17.7% of those transitioning to voluntary status).

## 4. Discussion

Among CCU residents who were admitted on a CTO, a longer duration of CCU stay was associated with a greater likelihood of CTO

**Table 3**

Outcomes of consumers subject to a CTO at admission and voluntary at discharge (CTO > VOL) and consumers subject to a CTO at admission and discharge (CTO-CTO) over 365-day period after discharge from CCU.

	Total sample (n = 311)	CTO > VOL (n = 63)	CTO-CTO (n = 248)	Test statistic and p-value
	M (SD)	M (SD)	M (SD)	
<b>Group level</b>				
HoNOS total Score	12.99 (9.14)	10.93 (9.68)	13.59 (8.93)	U = 1215.0.0, p = .075
LSP-16 total Score	17.85 (8.42)	16.43 (9.04)	18.20 (8.26)	t(238) = 1.298, p = .195
Hospital bed use	92.34 (133.54)	22.16 (61.49)	110.17 (140.91)	U = 4365.5, p = .000**
ED presentations	1.00 (3.24)	0.60 (1.46)	1.10 (3.54)	U = 6958.0, p = .114
Accommodation instability <sup>a</sup>	0.13 (0.50)	0.05 (0.28)	0.19 (0.59)	U = 7653.5, p = .955
<b>Individual level</b>				
HoNOS reliable change	N (%)	N (%)	N (%)	
No reliable change <sup>b</sup>	50 (44.2%)	6 (24.0%)	44 (50.0%)	$\chi^2(1) = 7.041$ , p = .030*
Reliable improvement	63 (55.8%)	19 (76.0%)	44(50.0%)	
HoNOS RCS change				
No RCS change <sup>c</sup>	63 (55.8%)	8 (32.0%)	55 (62.5%)	$\chi^2(1) = 7.342$ , p = .007*
RCS improved	50 (44.2%)	17 (68.0%)	33 (37.5%)	
Hospital bed use				
No reliable change <sup>b</sup>	103 (33.1%)	11 (17.5%)	92 (37.1%)	$\chi^2(1) = 8.745$ , p = .003**
Reliable improvement	208 (66.9%)	52 (82.5%)	156 (62.9%)	
ED presentations				
No reliable change <sup>b</sup>	264 (84.9%)	50 (79.4%)	214 (86.3%)	$\chi^2(1) = 1.878$ , p = .171
Reliable improvement	47 (15.1%)	13 (20.6%)	34 (13.7%)	
Accommodation instability <sup>b</sup>				
No reliable change <sup>b</sup>	251 (81.2%)	43 (70.5%)	208 (83.9%)	$\chi^2(1) = 5.748$ , p = .017*
Reliable improvement	58 (18.8%)	18 (29.5%)	40 (16.1%)	

**Abbreviations:** CCU=Community Care Unit; CTO=Community Treatment Order; HoNOS=Health of the Nation Outcome Scales; ED = Emergency Department; LSP-16 = Life Skills Profile-16; SD=Standard Deviation; RCS = Reliable and Clinically Significant; VOL = Voluntary treatment status. Data were missing for HoNOS total score (n = 178; 57.2%), LSP total score (n = 71; 22.8%), and accommodation instability (n = 1; 0.3%). \*  $p < .05$ ; \*\*  $p < .01$ .

<sup>a</sup> To minimize bias against consumers transitioning from long-term inpatient care to a CCU, consumers with more than 300 non-acute inpatient bed days (n = 26) were excluded from the analysis of accommodation instability.

<sup>b</sup> No reliable change includes consumers with reliable deterioration and no reliable change between pre-admission and post-discharge.

<sup>c</sup> No RCS change includes consumers with RCS deterioration and consumers with no RCS change in HoNOS Total score between pre-admission and post-discharge.

discontinuation by the time of discharge from CCU. After adjusting for the obvious confounders, residents whose treatment status was changed to voluntary during CCU care demonstrated better mental health and social functioning in the year after CCU discharge, compared to the year before admission. Additionally, these residents were more likely to experience reliable improvements in hospital bed use and accommodation instability, but not in ED presentations or disability. Overall, these findings suggest that discontinuation of involuntary treatment is not associated with adverse outcomes for residents leaving a community-based transitional rehabilitation environment.

There may be several explanations for these results. Longer CCU care



**Table 4**Binary logistic regression of CTO discontinuation during CCU care ( $n = 62/309$ ).

Predictor variables	p-value	B	SE of B	Exp ( $\beta$ )	95% CI
Duration of CCU care (days)	0.000**	0.003	0.000	1.003	1.002–1.003
Sex	0.007*	0.871	0.325	2.390	1.265–4.516
Primary diagnosis	0.058	−0.748	0.395	0.473	0.218–1.027
Hospital bed use	0.000**	−0.006	0.002	0.994	0.991–0.997

Abbreviations: CCU=Community Care Unit; CTO=Community Treatment Order; VOL = Voluntary treatment status; \*  $p < .05$ ; \*\*  $p < .01$ .

Missing data: Cases with <10% of missing values were excluded from the analysis ( $n = 2$ ).

Independent variables: Duration of CCU care (days); Sex (reference category = female); Primary diagnosis (reference category = F20-29); Psychiatry-related (acute and non-acute) bed use during a 365-day period before admission to CCU. Dependent variable: 0 = Same restrictive status (CTO-CTO) and 1 = Less restrictive status (CTO > VOL).

B: unstandardized regression coefficients;  $\beta$ : standardised regression coefficients; SE: Standard Error; CI: Confidence Interval. The full model correctly classified 80.9% of consumers (96.8% as remaining on a CTO and 17.7% as reducing their status from subject to a CTO to voluntary).

may allow for a sufficient improvement in psychosocial function rendering ongoing involuntary treatment unnecessary. For instance, consistent long-term support may increase the likelihood of collaboration and a strong therapeutic relationship between residents and clinicians in mental health treatment. This is consistent with findings that longer CCU care is also favourably associated with a range of positive treatment and psychosocial outcomes (Parker et al., 2020).

However, another explanation for the worse outcomes on follow-up for individuals who were still on a CTO at discharge is that their mental health and social functioning was poorer, resulting in clinicians maintaining involuntary treatment primarily out of concern for potential deterioration following discharge. A third possibility is that discharge from CCU care was unplanned (terminated early) for reasons such as poor adherence with treatment, self-harming behaviour or comorbid substance use (Arnautovska et al., 2020). Unfortunately, the reason for discharge, and whether this was planned or unplanned, was not captured in the dataset. Equally, it is not possible to infer that CTO discontinuation causally contributed to improved post-discharge outcomes.

A key limitation of this study is the reliance on a pre-existing retrospective administrative dataset. No information was available about the duration of involuntary treatment before or during the CCU stay. Additionally, no information was available about the reasons or mode of CTO revocation. However, given that it is known the vast majority of involuntary treatment Queensland-wide was revoked by authorised doctors during the study period (Queensland Health, 2019), information about the mode of revocation is not expected to pose a significant threat to the data interpretation. In terms of the outcome variables, HoNOS and LSP-16 scores at the time of discharge were not available. This data would have assisted in confirming or disconfirming that CTO discontinuation did not contribute to deterioration on exit to the community. However, the present results do raise the possibility that if residents stay long enough at a residential rehabilitation unit, their need for involuntary treatment lessens.

Another consideration is that legislation relevant to CTOs in Queensland during the study period was replaced by the Mental Health Act 2016 (Queensland Health, 2020). The current legislation (Mental Health Act 2016; Queensland Health, 2020) emphasises the absence of capacity to consent, and does not allow for involuntary treatment on the basis of unreasonable refusal of care (Gill et al., 2020). However, there is evidence that legislative changes to emphasise capacity have made little difference to the high rates of involuntary treatment in Queensland (Gill et al., 2020), and this is mirrored elsewhere in Australia except possibly in Victoria (Kisely, Moss, Boyd, & Siskind, 2020; Light, 2019; Ryan,

2019). Even in Victoria, it is unclear whether reductions in use are due to changes to the Act, or the effect of changes to funding in the state (Kisely et al., 2020). For instance, Victorian Mental Health Tribunals may not be correctly applying the assessment of capacity to their decisions (Ryan, 2019).

## 5. Conclusions

Residents whose CTO is discontinued on or prior to discharge from a residential rehabilitation unit experience more favourable treatment outcomes than those maintained on involuntary treatment. One predictor of CTO discontinuation is duration of CCU stay. This finding should give clinicians confidence that when the legislated criteria for involuntary treatment no longer apply, the discontinuation of a CTO does not necessarily risk deterioration in mental state following discharge from assertive residential rehabilitation support.

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## Declaration of Competing Interest

None.

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