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Hospital readmission rates in people subject to Community Treatment Orders in Ontario: a review of evidence following the implementation of *Brian's Law*

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ABSTRACT

Background: Community treatment order (CTO) legislation was introduced in the province of Ontario in 2000 with the introduction of Brian's Law (Bill 68), an amendment to the Mental Health Act spurred by the tragic death of Ottawa sportscaster Brian Smith. CTO's are a form of involuntary outpatient commitment, targeted at individuals with a history of repeated psychiatric admissions who also meet the criteria of an application for psychiatric assessment. A person subject to a CTO lives in the community under supervision and is required to adhere to various conditions, which often include taking prescribed psychiatric medications and meeting regularly with a psychiatrist. While various forms of CTO's are used internationally, legal standards and requirements for CTO's vary by jurisdiction, with Ontario having its own unique set of legislative criteria. **Objective:** To determine the effect of CTO's on readmission rates to hospital in persons with mental illness residing in Ontario, Canada. **Methods:** A structured literature review of English- and French-language peer-reviewed articles published after the year 2000, coinciding with the introduction of CTO's in Ontario, will be conducted on the Cochrane Library, EMBASE, Google Scholar, PsycINFO, PubMed, and grey literature. **Conclusion:** Ontario CTOs are associated with a marginal effect on readmission rates. Existing Ontario research is outdated and of very low quality.

CTOs IN ONTARIO

Year	CTOs issued or renewed per 100,000 population ¹⁻³
2003	6.7
2008	22.9
2015	71.7
2016	76.8

INTRODUCTION

- Government of Ontario introduced legislative amendments to the *Mental Health Act* and *Health Care Consent Act* in April 2000 allowing individuals to be placed on a community treatment order (CTO); CTO provisions were in effect by December 2000.⁴
- A CTO is a legal order, issued by a physician, that requires a person to receive treatment and supervision while living in the community: conditions often include attending medical appointments, taking psychiatric medications and/or injections.⁵
- Stated goal of the Ontario CTO legislation is to provide community-based care to individuals with serious mental illness, rather than 'revolving door' hospital-based care.⁴
- CTOs have been in use Canada⁶ and internationally prior to being introduced in Ontario;⁷ However, the larger body of evidence exists for CTOs in other jurisdictions.⁷
- Ethically, CTOs have been criticized for infringing on patients' civil liberties, disregarding patient autonomy, and varying widely in rate across jurisdictions.^{8,9}
- Legislative differences of CTO laws and requirements, even from one Canadian province to the next, urge caution in generalizing findings from studies of other jurisdictions.¹⁰

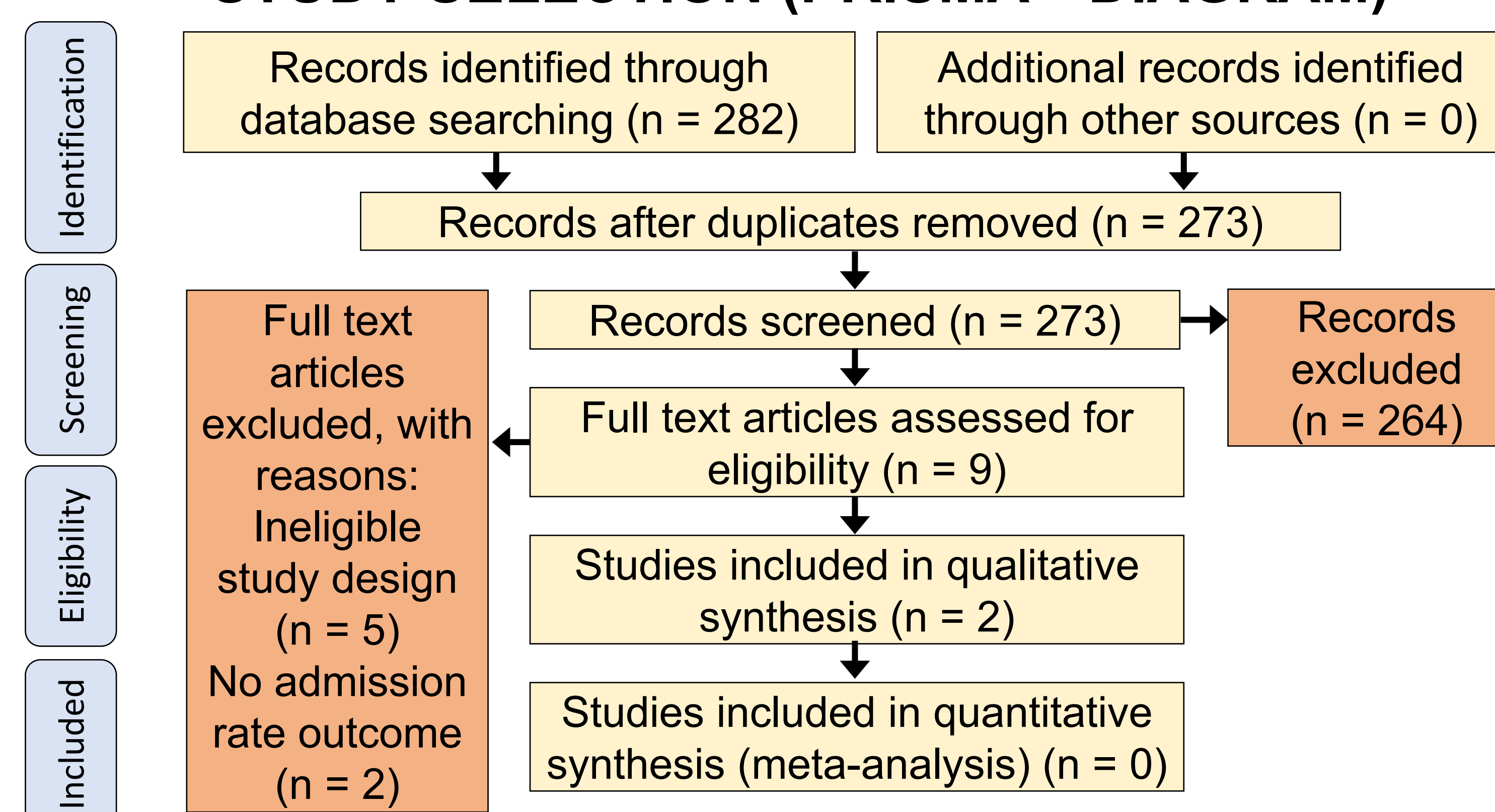
Research question: What effect do CTO's have on the rate of admission to hospital in persons with mental illness residing in Ontario, Canada?

PICO - Population: Ontarians with mental illness. **Intervention:** CTO. **Comparison:** Pre-CTO period or no-CTO. **Outcome:** Hospital (re) admission rates

METHODOLOGY

A structured literature review of English- and French-language peer-reviewed articles published after the year 2000, coinciding with the introduction of CTO's in Ontario, was conducted on the Cochrane Library, EMBASE, Google Scholar, PsycINFO, PubMed, and grey literature via the Turning Research Into Practice (TRIP) database. Search terms were "community treatment order" and Ontario. Studies were included if they examined an Ontario population, involved a CTO arm, and were a randomized controlled trial, controlled before-after, retrospective/prospective cohort, and case control designs. Studies selected for inclusion were analyzed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach.¹² Interrater reliability was performed on study inclusion with the assistance of an undergraduate psychology student (Cohen's kappa = 1.00). Two librarians and a pharmacoepidemiologist were consulted regarding the appropriateness of conducting a meta analysis effect size calculation.

STUDY SELECTION (PRISMA¹¹ DIAGRAM)



RESULTS - STUDY CHARACTERISTICS

Study ^{10,13}	Methods	Participants	Interventions	Admission to hospital pre vs. post intervention
Hunt (2007)	Controlled cohort pretest/posttest	n = 316 CTO group (n = 224): median age 31-40, 54.5% female Non-CTO group (n = 92)	CTO vs. non-CTO Both groups received case management	CTO group: mean reduction of 1.1 (SD = 1.20, 95% CI 0.86-1.34) 0 to 6 months post, 1.3 (SD = 0.96, 95% CI 1.11-1.49) 6 to 12 months post Non-CTO group: mean reduction of 0.9 (SD = 1.00, 95% CI 0.70-1.10) 0 to 6 months post, 0.9 (SD = 1.71, 95% CI 0.56-1.24) 6 to 12 months post Groups significantly different for 6 to 12 months post
O'Brien (2005)	Retrospective cohort pretest/posttest	n = 25 All participants on CTO: mean age 45, 60% male	CTO	Significant decrease in hospital admissions pre (1 year) and post (1 year) CTO (t=6.56, P<0.01), from 1.96 admissions to 0.6 admissions (SDs not reported)

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Risk of bias¹⁴ (Hunt 2007 | O'Brien 2005)

Random sequence generation: high | high
Allocation concealment: high | high
Blinding of participants and personnel: high | high
Blinding of outcome assessment: high | high
Incomplete outcome data: unclear | unclear
Selective reporting: low | unclear
Other sources of bias: high | high
GRADE Quality: ⊕○○○ VERY LOW (GRADE table not shown)

DISCUSSION

- The two studies included in the structured literature review suggest individuals placed on a CTO are likely to experience a small reduction in hospital readmission rates from the pre to the post CTO period
 - Compared to case management alone, a CTO combined with case management is associated with a marginally better reduction in readmission rates to hospital
 - The rate of CTOs issued or renewed in Ontario have increased drastically since their creation in 2000, yet empirical studies are few and far between
 - Since the Charter rights and freedoms of individuals subject to CTOs are severely restricted, future research in the Ontario context is badly needed to investigate the efficacy and appropriateness of CTOs
- Conclusion:** Being subject to a CTO in Ontario is associated with a slight reduction in hospital readmission rates.

LIMITATIONS

- The included studies are observational in nature, lack randomization, are of very low quality as a whole, and contain noteworthy risks of bias
- No exploration of the reasons for readmission to hospital
- A librarian was not consulted prior to conducting the search strategy. Some studies may have been missed due to the particular terms used
- The GRADE approach is incredibly challenging to implement and requires clinical knowledge. Despite consultation with a librarian, the inexperience of the reviewer urges strong caution in interpreting the quality rating. Interrater reliability was not conducted for the GRADE assessment
- The studies did not report information congruently, and one omitted SDs, such that an effect size calculation was not possible

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