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Segal, Steven P

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## THE UTILITY OF OUTPATIENT CIVIL COMMITMENT: INVESTIGATING THE EVIDENCE

**Steven P. Segal**

Professor University of Melbourne, Australia And Professor of the Graduate Division and Director of the Mental Health and Social Welfare Research Group, University of California, Berkeley, USA

### Abstract

**Background:** Outpatient civil commitment (OCC), community treatment orders (CTOs) in European and Commonwealth nations, require the provision of needed-treatment to protect against imminent threats to health and safety. OCC-reviews aggregating all studies report inconsistent outcomes. This review, searches for consistency in OCC-outcomes by evaluating studies based on mental health system characteristics, measurement, and design principles.

**Methods:** All previously reviewed OCC-studies and more recent investigations were grouped by their outcome-measures' relationship to OCC statute objectives. A study's evidence-quality ranking was assessed. Hospital and service-utilization outcomes were grouped by whether they represented treatment provision, patient outcome, or the conflation of both.

**Results:** OCC-studies including direct health and safety outcomes found OCC associated with reduced mortality-risk, increased access to acute medical care, and reduced violence and victimization risks. Studies considering treatment-provision, found OCC associated with improved medication and service compliance. If coupled with assertive community treatment (ACT) or aggressive case management OCC was associated with enhanced ACT success in reducing hospitalization need. When outpatient-services were limited, OCC facilitated rapid return to hospital for needed-treatment and increased hospital utilization in the absence of a less restrictive alternative. OCC-studies measuring "total hospital days", "prevention of hospitalization", and "readmissions" report negative and/or no difference findings because they erroneously conflate their intervention (provision of needed treatment) and outcome.

**Conclusions:** This investigation finds replicated beneficial associations between OCC and direct measures of imminent harm indicating reductions in threats to health and safety. It also finds support for OCC as a least restrictive alternative to inpatient care.

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Steven P. Segal, School of Social Welfare, 120 Haviland Hall (MC #7400), University of California, Berkeley, Berkeley, CA 94720-7400, 510-527-7906 Office, 510-526-7964 FAX, spsegal@berkeley.edu.

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## 1. INTRODUCTION

Outpatient civil commitment (OCC) provisions, community treatment orders (CTOs) in Australia and Commonwealth nations, are part of mental health law worldwide. OCC-statutes, though varied by jurisdiction, in interpretation, and language, almost universally state their objective as achieving the reduction of risks of harm to self and others or threats to health and safety associated with people with severe mental illness who are refusing needed treatment.

Seven OCC research reviews cover studies in the U.S., Europe, and Commonwealth Nations (see: Churchill, Owen, Hotopf, Singh; 2007; Kisely, Campbell, Scott, Preston, & Xiao, 2007; Kisely, Campbell, O'Reilly, 2017; Maughan, Molodynski, Rugkåsa, & Burns, 2014; Rugkåsa, Dawson, Burns, 2014; Rugkåsa, 2016a; Barnett, Matthews, Lloyd-Evans, Mackay, Pilling, Johnson, 2018). When focused on randomized studies, they conclude that OCC is "...no more likely to result in better service use, social functioning, mental state or quality of life compared with 'standard voluntary care'" (Kisely, Campbell, O'Reilly, 2017). When focused on all-studies, they conclude: "there is no support in the existing evidence for the hypothesis that [OCC yields] results,...nonrandomized outcome studies show discrepant results,...differences between their findings are striking,...some reporting benefits and others reporting none..."(Rugkåsa, 2016a). Flaws in the implementation and analysis of randomized studies may account for "no difference" findings (Hawkins, 2016; Mustafa, 2017; O'Reilly, Vingilis, 2017; Segal, 2017). Mixed programmatic efforts, some of which may enhance outcomes, as they use the OCC-intervention as prescribed, and some of which may degrade outcomes because they fail on important aspects of the intervention, may account for discrepant results. Indiscriminate combining of studies may yield inconsistent findings and perhaps erroneous conclusions about OCC-effectiveness. A major objective of most research is to explain variance, inconsistencies. This OCC-research review proceeds from the perspective of investigative epidemiology, which requires that an understanding of the substance and dynamics of the intervention and its context be part of the outcome assessment.

### 1.1 Outpatient commitment: Its objectives, requirements, and limitations.

While scholars in the mental health field have emphasized their own perceptions of what OCC policy objectives are or should be, OCC policy is set down in legislative statute and validated by the courts. The U.S. Supreme Court has ruled that there is "... no constitutional basis for confining [persons with mental illness] involuntarily if they are dangerous to no one and can live safely in freedom" (O'Connor v. Donaldson 422 U.S. 563. 1975). The U.K. Parliament's intention for the use of the OCC in the U.K. Mental Health Act of 2007 was to "...put [the assignment to OCC] to the clinical decision about the risk in the community..." (U.K. Parliament Health Committee, 2018). U.S. state courts have expanded the interpretation of the dangerousness standard to include the provision of needed treatment offered on a preventive basis<sup>1</sup>. This offering, however, is tied to a likelihood of an anticipated behavioral threat to health and safety (In re Detention of LaBelle, 728 P.2d at

<sup>1</sup>When the words "in order to prevent deterioration" are added to ICC-criteria, returning a patient to hospital for needed treatment, i.e. prior to their engagement in a dangerous act, is easier. This statutory component should not be confused with the few jurisdictions,

149; Dennis H., 647 N.W.2d at 863; and *In re K.L.*, 806 N.E.2d 480). While there is some variance in the law<sup>2</sup>, the protection of harm to self and others and/or dangerous to self and others are the most represented criteria for assignment to OCC. These criteria are fundamental and included in all expanded criteria (Bazelon Center for Mental Health Law, 2004). The requirement is enforced only when an evaluation finds that *individuals, due to a mental disorder, refuse to accept treatment needed to protect them against imminent threats to their health and safety and that of others* (Ferris, 2008; Saya, et al, 2019).

A significant component of OCC's behavioral criteria is "imminence." While appearing in only a small number of statutes (Bazelon Center for Mental Health Law, 2004), in practice, the threat, danger, need for protection, or mandate to "prevent deterioration", when viewed as a justification for civil commitment, involves acts expected immediately or in the near future (*O'Connor v. Donaldson* 422 U.S. 563. 1975). Long-term threats to health and safety are not considered a justifiable basis for involuntary confinement (Segal, et al, 1988). Smoking or eating from garbage cans over an extended period are long-term threats to health but do not constitute evidence justifying involuntary commitment (Segal, et al, 1988).

Involuntary OCC is generally described as a *least restrictive alternative (LRA) to psychiatric hospitalization* for those meeting the inpatient commitment criteria of the jurisdiction. The concept of least restrictive alternative derives from U.S. court decisions. *Lake vs. Cameron* 364 F.2d 657 1966 found that a person "cannot be kept in an institution if there's some less restrictive way to keep her safe." In *Jackson vs. Indiana* 406 US 715 1972, the Court held "...due process requires that the nature and duration of commitment bears some reasonable relation to the purpose for which the individual is committed"—implying that no one should be retained on OCC beyond the time they continue to pose a threat to self and others. Most importantly, the LRA to hospitalization implies that there is an available and effective alternative. Without such an alternative, the hospital remains the treatment of choice.

OCC addresses the LRA-standard most commonly via "conditional release" from an inpatient facility, an analogue of parole from a criminal justice setting, i.e. early-release while still eligible for detention. Days of hospitalization are saved in the patient's current inpatient episode, since without OCC the patient would be retained in hospital. OCC also addresses the LRA-standard with an analogue of probation, when individuals, meeting adjudicated committable criteria to an inpatient facility are diverted to an outpatient program. This diversion from hospital saves the number of inpatient-days perhaps best estimated by the average duration of the patient's previous hospitalizations (King, 1995).

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using "preventive-OCC" (King, 1995), where the ICC-criteria are more stringent than the OCC-criteria and thus where it is more difficult to return a patient to needed inpatient-care.

<sup>2</sup>Protection of harm to self and others is the only behavioral basis for OCC-qualification in 23 of the 46 U.S. OCC-jurisdictions (Treatment Advocacy Center, 2017), 5 of 8 Australian mainland states and territories (Mental Health Act: 1996 Tas s 24; 2000 NSW s 14(1)(b); 1998 WA s 26(2); 2000 Qld s 14(1)(f); 2014 Vic No. 26), New Zealand (NZ Ministry of Health Guidelines for Compulsory Assessment and Treatment Act 1992, Section 2(1.1) of the MH(CAT) Act), the U.K. (U.K. Mental Health Act 2007–8), Norway (Norwegian Act No. 62 of 2 July 1999), Canada (O'Reilly &, Gray, 2014), and Israel (Treatment of Mental Patients Law, 1991, S.H. no. 1339, p. 58). "Italy, Spain, and Sweden are the only countries [in Europe] in which the danger to oneself or others is not considered a criterion for involuntary treatment (Saya et al., 2019, p7)".

## 1.2 Assessing OCC research

In order to determine whether OCC is effectively meeting its objectives, this review considered each research study based on four assessments of its value for understanding the utility of the intervention:

1. Whether study outcomes addressed OCC-statutory objectives and the extent to which the interpretation of such outcomes were compromised by being conflated with mandated provision of needed-treatment and or determined by context, treatment delivery, and/or implementation facts associated with influencing a study's outcome criterion.
2. The study's rank in the evidentiary hierarchy of causal certainty based on how it was implemented.
3. Whether the results of the study should be expected to yield a conclusion of "failure to find an effect" when a "no difference" between groups is the outcome. In some studies achieving this conclusion may be unreasonable since it has been demonstrated that in most studies the OCC group is more symptomatically ill than their voluntarily hospitalized comparisons (Segal, Hays, & Rimes, 2017a).
4. The degree to which the study population is representative of the OCC population vs. a selected subset.

## 2. METHOD

### 2.1 Selection of studies

OCC-research studies, conducted from 1986–2019 and reported on in the seven existing OOC review articles were included (see: Churchill, Owen, Hotopf, Singh; 2007; Kisely, Campbell, Scott, Preston, & Xiao, 2007; Kisely, Campbell, O'Reilly, 2017; Maughan, Molodynski, Rugkåsa, & Burns, 2014; Rugkåsa, Dawson, Burns, 2014; Rugkåsa, 2016a; Barnett, Matthews, Lloyd-Evans, Mackay, Pilling, Johnson, 2018). The list of OCC studies was developed by working backwards from the reference lists of the most recent review (Barnett, Matthews, Lloyd-Evans, Mackay, Pilling, Johnson, 2018) through the references of all six other reviews. In addition, since Barnett et al (2018) searched through the fourth week of December 2017, this review searched for additional studies from January 1, 2016 through October 2019.

The procedure for the search in each review article and followed herein is that described in Barnett et al (2018)<sup>3</sup>.

<sup>3</sup>Barnett et al (2018) searched three electronic databases (PsychINFO, for articles published between Jan 1, 1806, and the fourth week of December, 2017; Embase, between Jan 1, 1974, and the first week of January, 2018; and MEDLINE, between Jan 1, 1946, and the fourth week of January, 2018) for publications in English, using the search terms "community treatment order" or "CTO" or "outpatient commitment" or "compulsory" or "mandatory" outpatient commitment" or "civil commitment" AND "SMI" or "psychiatric" or "manic" or "schizophrenia" or "bipolar". They then applied a backwards reference search to the studies identified by manually searching reference lists of eligible studies. They also searched for articles that cited eligible studies using Scopus, and assessed those for eligibility. They searched review articles identified through the search to identify additional studies. Bursten, 1986 and Kallapiran et al, 2010 are not considered herein. Though reported on in Barnett et al's review, they were outside the scope of review criteria specified for that review and all previous reviews since they included forensic patients.

Inclusion criteria herein were peer-reviewed studies reported in English as well as ones reported in the reviews that were unpublished. Samples included a majority (>50%) of patients that had severe mental illness, and OCC interventions, defined as legal compulsion on patients to remain in contact with mental health services or accept treatment in the community, or both. Interventions in which compulsion was in response to a criminal offence were excluded.

Herein the primary outcome measures involved threats to health and safety as well as was readmission to hospital, length of hospital stay, (i.e., inpatient bed-days), use of community services, and treatment adherence. Eligible study designs were quantitative randomized trials, contemporaneous controlled comparison studies comparing a group who were subject to OCC with a group not subject to OCC, pre-post and pre-during-post studies comparing service use by patients before, during, and after the imposition of OCC.

## 2.2. Validity of outcomes.

Studies were grouped by outcome measures according to their *substantive validity*—i.e. how closely they addressed OCC-objectives specified in statute law. Only direct measurement of indicators related to *providing needed treatment to protect health and safety, reducing the risk of harm to self and others, and providing a least restrictive alternative to hospitalization* were considered in Validity-group I. Measures conflated with the provision of needed treatment intervention, resource availability, patient severity, chronicity, & bed-availability were considered as Validity-group II. Improved social functioning, quality of life, employment, housing, homelessness, and consumer or family-carer satisfaction, while laudable objectives and potential secondary consequences of OCC-intervention, are not statutorily defined OCC objectives. The U.S. Supreme Court has ruled that: "...while the State may arguably confine a person to save him from harm, incarceration [involuntary care] is rarely if ever a necessary condition for raising the living standards of those capable of surviving safely in freedom, on their own or with the help of family or friends." (O'Connor v. Donaldson 422 U.S. 563. 1975) Studies employing these quality of life criteria were in Validity-group III. They attribute outcomes to OCC that it is neither designed to nor expected to achieve. Consequently, they are not discussed herein.

## 2.3 Ranking causal certainty

Figure 1 describes the Berkeley Evidence Rank (BER) system. The BER relies on principles of experimental design to rank the degree of causal certainty attributable to a study's results based on the characteristics of the study on completion. While the BER system addresses the hierarchical ordering of comparison group studies, it does not address the causal certainty hierarchy of pre/post and pre/during/post own-control studies. Barnett et. al.'s review used the Newcastle-Ottawa Score (NOS) ranks to establish the causal certainty rank of these studies as well as comparison group studies, i.e. exclusive of OCC studies employing random assignment (Wells, Shea, O'Connell, Robertson, Peterson, Welch, Losos, & Tugwell, 2018). Herein, two assessments of the reliability of the causal certainty hierarchical rank ordering were completed. First, reliability coefficients were computed based on agreement between BER and NOS rankings for the comparison group studies that had ratings available in both systems<sup>4</sup>. Then, using the NOS instructions provided by Wells et al

(2018), randomized comparison group studies and newer studies not ranked by Barnett et al on NOS, were assigned NOS ranks by the author. This task was completed without reference to his BER initial ranks of these studies completed approximately one year earlier. This procedure added to the number of studies rank-ordered enabling a second estimate of reliability.

Reliability was measured using the absolute values of the Pearson  $r$  and Spearman Rank  $r_s$  correlation coefficients. These measures were chosen because they respectively assume interval and ordinal measurement, in a manner consistent with the hierarchical interpretation of the ranks, and because the systems are coded in opposite directions, with the top rank in BER=1 and in NOS=9.

#### 2.4 Use of the null-hypothesis as a “no impact expectation” test.

A “no impact expectation” was made for all reviewed studies. There are studies in which it is inappropriate to use the “null hypothesis” as an indicator of a “no impact expectation.” When pre-existing disabilities related to making an OCC assignment remain uncontrolled at a study’s end, the “null hypothesis” is misapplied in comparison-group-studies to conclude: “no effect” or more accurately “failed to find an effect” (Fisher, 1966). The OCC-group may be justifiably expected to do worse, so a positive finding might be one where outcomes improve to a level where they are no different from the less disturbed comparison group.

In studies where the dependent variable is both a measure of the delivery of needed treatment in the absence of adequate community-based care and, as viewed by many, a “failure to prevent hospitalization”, the “no impact expectation may be “not determinable”. For example, when re-hospitalizations were increasing in the presence of reductions in community-based services in Victoria Australia, OCC-initiated-re-hospitalization was the needed treatment of choice. It was associated with a reduction in an individual’s major-crime risks, 13% reduced initial risk of perpetrating a major crime, and a 17% reduced-initial-risk of being a victim of a major crime (Segal, Rimes, & Hays, 2019). When relying on re-hospitalization as an outcome the conclusion of no impact may not be determinable without a clear understanding of community service availability, bed-availability, and the full context of care.

#### 2.5 Generalizability

Studies addressing selected subgroups of OCC-patients, e.g. patients receiving 6-months of OCC or excluding dangerous patients, were considered separately so as not to generalize their findings to all OCC patients.

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<sup>4</sup>Barnett did not rank comparison group studies that used randomization. Thus, Barnett’s NOS study rankings of other comparison group studies captured from her summary table were added to the author’s BER study ranks Excel file as an additional column. All studies without overlapping NOS/BER assessments were deleted from the resulting Excel table. The remaining studies were taken into SPSS and reliability coefficients were computed for them.

### 3. RESULTS

#### 3.1 Causal Certainty and Evidence Ranking

Given experimental design criteria there are no fully implemented randomized controlled trials (RCTs) evaluating OCC<sup>5</sup> (Hawkins, 2016; Mustafa, 2017; O'Reilly, Vingilis, 2017; Segal, 2017), only three studies inappropriately described as such (Burns, Rugka<sup>o</sup>sa, Molodynski, Dawson, Yeeles, Vazquez-Montes, Voysey, Sinclair, Priebe, 2013; Swartz, Swanson, Hiday, Wagner, Burns, Borum, 2001a; Swartz, Swanson, Wagner, Burns, Hiday, Borum, 1999; Steadman, Gounis, Dennis, Hopper, Roche, Swartz, Robbins, 2001). None of these studies has standardized post-OCC-experiences. Randomization has failed to control outcome relevant pre-assignment differences in two studies (Swartz, Swanson, Hiday, Wagner, Burns, Borum, 2001a; Swartz, Swanson, Wagner, Burns, Hiday, Borum, 1999; Steadman, Gounis, Dennis, Hopper, Roche, Swartz, & Robbins, 2001). One study failed to enforce OCC provisions for hospital return, and only one of the three have used multivariate controls in their analyses. Matching, another control procedure used in several studies, only achieves partially relevant pre/post confounder control, even when it involves propensity-score matching procedures (King & Niensenz, 2016). Thus, all studies provide relevant information and can be ranked in an evidence hierarchy.

Inter-rating agreement between the BER and NOS evidence hierarchy rankings of OCC studies was computed first with the 10 studies rated independently by the author and Barnett et al. Agreement between the different systems was  $r = |.75|$  and  $r_s = |.74|$ . For the 11 studies rated by the author approximately one-year apart in the two systems it was  $r = |.86|$  and  $r_s = |.70|$ . For both sets of 21 outcome studies the reliability coefficients were  $r = |.78|$  and  $r_s = |.79|$ . Studies excluded were all randomized studies and own-control studies with no comparison group.

Average evidence-rankings for all outcome-areas are included in Table I. There were 38 outcomes assessed in Validity Group 1 that directly measured OCC statutory objectives, 25 in Validity Group 2 measuring hospital and service utilization outcomes, and 10 addressing subsets of the OCC population. Validity Group 1 studies ranked highest in the evidence hierarchy (Weighted Mean Rank of Outcome Groups = 2.23) followed by Validity Group 2, the hospital and service utilization studies, (Weighted Mean Rank of Outcome Groups = 2.96), and lastly those studies addressing OCC sub-groups (Weighted Mean Rank of Outcome Groups = 3.58). Evidence ranks in both the BER and NOS systems for each study when applicable and available are included in the study summary Tables, II, III, and IV.

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<sup>5</sup>The RCT is the “gold standard,” the top-ranked means to achieve causal-certainty. However, simply going through the process of randomly assigning research subjects to two comparison groups does not qualify a study as an RCT. An RCT's operative-component is the ability to control for both before and after conditions that are inappropriate influences to a “no difference” conclusion outside of the effects of the tested intervention. Randomization usually achieves the before condition control but the success of this process is not a guaranteed certainty. It must be verified and if found to be deficient, i.e. the comparison group post-randomization still shows significant pre-randomization-differences related to the outcome, then the randomization process has failed and the assumption that the study has controlled for history is not a justifiable one. Since OCC comparison group studies do not reach the level of controlled laboratory experiments, true RCTs, alternative methods of adjusting for pre/post-period confounders need to be used to add confidence to an assumption of causality.



### 3.2 Studies Employing Direct (Validity-Group 1) Measures of OCC Statutory Objectives (see Table II).

Thirty-eight OCC-outcomes were considered in six-outcome-areas directly addressing OCC statute objectives: 20 considered imminent threats to health and safety, 10 compliance with efforts to provide needed-treatment, and 8 with conformity to the LRA standard. The mean evidence-rank for all six-outcome-areas is 2.56, when weighted by sample size, 2.23 (See Table I). Henceforth a study is indexed first by the table number in which it is summarized, then the outcome content area letter it is listed under, followed by the order within the outcome content area in which it appears. For example, in Table II the first mortality study would be II.A.1.

**A. Mortality (Table II.A.1–5).**—Five studies [Evidence Rank  $M_{\text{Sample-Weighted}} = 2.23$ ,  $M=2.70$ ] (Segal, Hayes, Rimes, 2017b; Kisely, Preston, Xiao, Lawrence, Louise, Crowe, 2013b; Segal, & Burgess, 2006c; Power, 1992, McFarland, Mahler, Kovas, 2005; Pollack, McFarland, Mahler, Kovas, 2005) found OCC associated with reduced all-cause mortality-risk. Three of them, case-controlled studies comparing OCC-patients with non-OCC-patients (II.A.1–3), used a combination of matching, propensity score adjustment, and regression controls for before and after experiences. Their findings of OCC's association with reduced all-cause mortality-risk span three decades (Segal, Hayes, Rimes, 2017b; Kisely, Preston, Xiao, Lawrence, Louise, Crowe, 2013b; Segal, & Burgess, 2006c). The fourth (II.A.4) (Pollak, et al., 2005), finding no significant difference between the groups, found that all suicides and deaths due to unnatural causes occurred in the comparison sample. The fifth adjusted comparison group study (II.A.5) (Power, 1992) found more non-OCC group deaths.

**B. Access to imminently needed/acute physical health care (Table II.B.1–2).**

—Patients with severe mental illness have elevated physical-illness-comorbidities and poor access to medical care (Parks, Svendsen, Singer, Foti, 2006). Two case-controlled-studies (Evidence-Rank  $M_{\text{Sample-Weighted}} = 2$ ) address this issue. Segal, Hayes, & Rimes (2018a) (II.B.1) found that OCC patients, while under mental health system supervision, were 40% more likely to obtain an acute-physical-illness diagnosis over a ten-year period than psychiatrically-hospitalized-non-OCC-patients were, and 5.02 times more likely than lower-morbidity-risk-never-hospitalized-outpatients. Without such supervision, OCC-patients' chances of receiving such a diagnosis were 31% lower than non-OCC-patients were, and no different from outpatients. The OCC requirement for a medical examination, enabled access to acute medical care that was associated with a 20% reduced risk of non-injury related death (Segal, Hayes, & Rimes, 2018a).

OCC-patients in Kisely (2014) (II.B.2) did not differ from non-OCC-patients during a three-year-follow-up in obtaining a medical procedure for physical illness.

**C. Perpetration of crimes against person, violence, and suicide-risks (Table II.C.1–11).**

—Eleven U.S. and Australia studies [Evidence Rank  $M_{\text{Sample-Weighted}} = 2.01$ ] considered the issue of violent behavior and major crime-risk sufficient to constitute a threat to safety of self and others (Segal, Rimes, Hayes, 2019; Link, Epperson, Perron, Castille, Yang, 2011; Phelan, Sinkewicz, Castille, Huz, & Link, 2010; Pollak et al 2005; Swanson,

Swartz, Borum, Hiday, Wagner, Burns, 2000; Vaughan, McConaghy, Wolf, Myhr, Black, 2000; O'Keefe, Potenza, Mueser, 1997; Power, 1992; Hiday, Scheid-Cook, 1987; Erickson, 2005; Hough & O'Brien 2005). Four case-control-studies (II.C.1–3,5) found reduced crime, crime-risk, and violence associated with OCC assignment compared to non-OCC-patients (Segal, Rimes, Hayes, 2019; Link, Epperson, Perron, Castille, Yang. 2011; Phelan, Sinkewicz, Castille, Huz, & Link, 2010; Swanson, Swartz, Borum, Hiday, Wagner, Burns, 2000). One adjusted comparison group study (Power, 1992) (II.C.8) and four own-control-studies (Vaughan, McConaghy, Wolf, Myhr, Black, 2000; O'Keefe, Potenza, Mueser, 1997; Erickson, 2005; Hough & O'Brien 2005) (II.C.6, 7, 10, 11) seem to support the role of OCC in limiting violence while the orders are in place. Two (II.C.4 & 9) (Pollak et al 2005; and Hiday, Scheid-Cook, 1987, 1989, & 1991) found no difference between groups.

**D. Victimization (Table II.D.1–2).**—Two case-control-studies (Evidence-Rank  $M_{\text{Sample-Weighted}} = 2$ ) compared OCC cases against hospitalized non-OCC cases. One used matching, propensity-score and regression-controls (Segal, Rimes, Hayes, 2019) (II.D.1), the second, though randomized unsuccessfully, added regression-control (Hiday, Swartz, Swanson, Borum, Wagner. 2002) (II.D.2). Both reported reduced victimization-risk associated with OCC placement.

**E. Medication Adherence and Engagement with Outpatient Service (Table II.E.1–11).**—Eleven studies [Evidence Rank  $M_{\text{Sample-Weighted}} = 2.68$ ] of varying design found OCC associated with improvement in the use psychotropic medications, medication compliance, and treatment participation. Busch, Wilder, Van Dorn, Swartz, & Swanson (2010) (II.E.1) (Evidence-Rank-2) compared medication-possession-ratios (MPRs) of OCC-patients with ACT, ACT-patients without OCC, and patients without either intervention. Overtime, the MPR for the “OCC/ACT” group increased by 31–40%, while in the “ACT only” group it increased by 15–22%, and in the “neither treatment group” it increased by only 8–19%.

Similar findings are replicated in Pollak et al's (2005) (II.E.3), adjusted comparison group study, where psychotropic medication use increased in their OCC group vs. their non-OCC-comparisons even though prior history indicated the OCC-group had been less medication compliant than the non-OCC-comparisons. Hiday, Scheid-Cook (1987, 1989, 1991) (II.E.7) in a simple comparison group study compared post-civil commitment hearing incidence of medication refusals among those placed on OCC following a hearing with those hospitalized and those released following the hearing. They found significantly fewer medication refusals and significantly less treatment non-compliance in the OCC group than the other two groups.

Two studies reported increased engagement with services. O'Brien, Farrell, Faulkner (2009) (II.E.9) found that patients previously registered but unengaged with services increased their engagement with both case management and housing services in conformance with the OCC requirement. Dye, Dannaram, Loynes, Dickenson (2012) (II.E.10) found that patients evidenced significantly increased engagement over at two year follow-up period. They moved from an average rating indicating: “minor engagement (some appointments attended

and doubtful adherence to medication), to ratings indicating: “good engagement (i.e. most appointments attended and generally adherent to treatment)”.

When an OCC cohort study is considered, generally both medication and service compliance improves during the period of supervision and deteriorates in the post period. When compared to the period before OCC assignment, Erickson (2005) (II.E.7) reported increased compliance during OCC with medication, therapy, and substance abuse treatment. Power, (1992) (II.E.6) in two separate analyses, the first an own-control study, found that outpatient medication compliance for their OCC cohort was poor pre OCC, good during the OCC, and significantly deteriorated to less than good post OCC. In the second analysis, an adjusted comparison group study, he compared medication compliance among OCC vs. a matched non-OCC group, the OCC-group that had poorer compliance in the year before the study was found to be no different from the non-OCC group during a year and a few weeks follow up period.

Patients maintained on OCC or renewed to OCC over a period of 6 months or more tend to be more compliant. Studies by Van Dorn, Swanson, Swartz, Wilder, Moser, Gilbert, Cislo & Robbins (2010) (II.E.2) and Swartz, Swanson, Wagner, Burns, & Hiday (2001b) (II.E.4) found increased compliance among patients maintained on OCC for more than six months. Ozgul & Brunero (1997) (II.E.5) following OCC-patients for almost three years, found a significant reduction in the average neuroleptic dosage from their first to their fourth OCC assignment as well as 100% compliance ratings. Frank et al (2019) following a CTO cohort for five years found adherence to LAIs increased over time (II.E.11).

**F. Least restrictive alternative to hospitalization (Table II.F.1–8).**—OCC is a least restrictive alternative (LRA) to hospitalization in two ways: diversion from a pending hospitalization episode, and early release from hospital. The savings from early release are counted against the time a person would have spent in hospital had it not been for the availability of the OCC mechanism. Eight studies [Evidence Rank  $M_{\text{Sample-Weighted}} = 2.47$ ] (Segal Hays Rimes 2017a; Kisely et al. 2013a; Segal and Burgess 2006b; Swartz et al. 2010; Hunt et al. 2007; Segal et al. 2009; Muirhead et al. 2006; Van Putten, Santiago, Berren, 1988) addressed hospitalization-episode-duration and all reported statistically significant savings associated with the use of OCC that supports the LRA-effect. All the follow-up duration savings in the patients’ average episode duration associated with an OCC-diversion have not been considered. Four studies, (II.F.1, 3, 4, & 6) (Segal Hays Rimes 2017a; Segal and Burgess 2006b; Swartz et al. 2010; Segal et al., 2009), were able to support the LRA-effect after controlling for the potential confounding influences of deinstitutionalization.

### **3.3 Studies Employing Outcome Measures (Validity-Group II) Hospital and Service Use Following OCC-assignment: Including Hospital Admission, Hospital-Day Accumulations, and Service-Utilization Outcomes Potentially Conflated with Resource Availability, Severity, and Chronicity (see Table III).**

This section addresses the variance in post OCC inpatient utilization outcomes reported in previous reviews. It considers trends in care, community service availability, and patient illness severity, situations that interact with OCC to determine utilization outcomes. Twenty-

five studies of hospital utilization outcomes following OCC placement are grouped herein by five interactive determinants [Evidence Rank  $M_{\text{Sample-Weighted}} = 2.96$ ]. Each section begins with specification of the interactive determinant's influence and is followed with a report of study results.

**A. Hospitalizations and Deinstitutionalization (Table III.A.1).—**The structural feature defining the number of hospital admissions in the last 60 years across jurisdictions is hospital-bed-availability. Reduced bed availability in the short-term is associated with increased admissions of shorter duration (Keown et al, 2011), in the longer-term there are not enough beds, admission numbers fall and patients are left to homelessness or housed in forensic facilities and nursing homes (Torrey et al, 2008). Taylor (2015) (III.A.1) [Evidence Rank  $M_{\text{Sample-Weighted}} = 3.00$ ], examined hospital bed-day usage pre/post the introduction of OCC to Scotland. From 2007–2012 OCC-patients evidenced a 40% drop in bed-days. OCC use began in Scotland in 2005. From 1997–2007 psychiatric-beds were reduced by one-third; from 2007–2012 bed-numbers fell another 26% (ISD Scotland National Statistics, 2016).

**B. OCC-tenure—**(Table III.B.1–2)—effects on hospitalization days and admissions while under OCC supervision. Since a majority of OCCs terminate in a brief period of time (Carroll, 2018), studies comparing OCC vs. non-OCC groups for a fixed follow-up period of a year or two after hospital release are comparing the experiences of two groups who have spent most of their time outside of OCC supervision. Doing so provides an inaccurate assessment of the role of OCC. These studies conflate time during the follow-up period on OCC with time outside of OCC-jurisdiction. Two studies [Evidence Rank  $M_{\text{Sample-Weighted}} = 2.50$ ], accurately, consider admissions, hospital days, and outpatient service utilization during OCC. Both Harris, Chen, Jones, Hulme, Burgess, & Sara (2018) (III.B.1) and Segal & Burgess (2006a) (III.B.2) found fewer hospital days and admissions as well as more service utilization characterized the OCC group during their OCC tenure.

**C. Studies from OCC jurisdictions where patients were assigned to Assertive Community Treatment (ACT) teams, and/or where community services were increased, prioritized (often targeted at OCC patients), and where these services received increased financial support (Table III.C.1–13).—**Thirteen studies address this issue [Evidence Rank  $M_{\text{Sample-Weighted}} = 3.00$ ]. The ACT team, employing aggressive case management, is the most effective way to reduce or prevent hospitalization (Marshall & Lockwood, 2017). The weighted relative benefit index for experimental vs control groups in ACT randomized studies is 97% for “Not admitted to hospital.” When the system of care has an ACT team or an equivalent form of aggressive case-management, the focus of the team is keeping the patient out of the hospital. One large study (Swartz, Wilder, Swanson, Van Dorn, Robbins, Steadman, Moser, Gilbert, & Monahan, 2010) (III.C.1) and three smaller ones (Hunt, da Silva, Lurie, Goldbloom, 2007; Nakhost, Perry, Frank, 2012; O’Brien A, Farrell, 2005) (III.C.2–4), respectively, show that OCC coupled with ACT or an “assertive outreach team” reduced post OCC admissions and total bed-days. This result is most vividly illustrated in III.C.1, where the state incorporated ACT teams into their OCC strategy and the combination showed an incremental effect of

OCC over ACT alone (Swartz, Wilder, Swanson, Van Dorn, Robbins, Steadman, Moser, Gilbert, & Monahan. 2010).

Studies by Rawala & Gupta (2014) and Rohland, Rohrer & Richards (2000) (III.C.5, 6) show the effect of combining OCC with increased services. Studies by O'Brien & Farrell (2005) and Fernandez & Nygard (1990) (III.C.4, 7) show the outcomes associated with a jurisdiction's commitment to fund increased services for OCC patients. Ozgul & Brunero (1997) (III.C.10) found that after the initiation of a case management program there were reductions in the number of admissions and in admission duration during OCC when compared to the prior 12 months.

A jurisdiction's commitment to provide aggressive community services in conjunction with OCC was found in IIIC.8 to significantly reduce the number of admissions of the OCC group pre/post the implementation of the law. It brought the service level to that characterizing the voluntary comparison population (Power, 1992). Similarly, Geller, McDermeit, Grudzinskas, Lawlor, & Fisher (1997) and Geller, Grudzinskas, McDermeit, Fisher, & Lawlor (1998) (III.C.9), studied involving police enforcement. They found that within the first 6 months of follow-up the OCC group showed a decrease in readmissions, bringing them to the level of the control samples. In the last quarter of their 24-month follow-up, however, the controls had significantly fewer admissions than the more severely ill OCC patients did--perhaps a reflection of the absence of OCC oversight. All these study findings support the association of service increase with reductions in re-admissions and total inpatient days.

Three additional studies provide mixed results, mentioning a need to improve outpatient services but providing no direct evidence of enhanced outpatient services. Zanni & Stavis (2007) (III.C.11) and Zanni & de Veau (1986) (III.C.12) compared OCC group experience pre/post assignment. Both reported a significant reduction in admissions per year and non-significant trends in reduced hospital days per year. Awara, Jaffar, & Roberts (2013) (III.C.13) found reductions in admissions and bed days pre vs during and pre vs post OCC.

**D. Studies from Jurisdictions Reporting that Community-Service Contacts Had Been Reduced Or Were Limited (Table III.D.1–3).**—Three studies address this issue [Evidence Rank M<sub>Sample-Weighted</sub> = 2.33]. No OCC statute (Bazelon Center for Mental Health Law, 2004; Victorian Mental Health Act of 1986 No. 59 of 1986; *United Kingdom Mental Health Act 2007 Chapter 12 Amended* 19th July 2007) includes the words “prevent hospitalization” or “stop the revolving door.” To do so would be eliminating access to needed treatment especially where community service is limited. Segal, Hayes, & Rimes (2017a) (II.D.1) reported a reduction in the frequency of community service contacts per community care episode accompanied by increased re-hospitalization and increased post-OCC hospital days, despite showing briefer hospital episodes, i.e. OCC-associated early releases. This scenario is validated in Christy, Petrila, McCranie, & Lotts (2009) (III.D.2) where a majority in the pre and post period had OCC associated returns to psychiatric emergency commitments. The explanation, derived from survey-reports, focused on the use of OCC with a lack of community treatment resources (Christy, Petrila, McCranie, Lotts, 2009).

Wagner et al (2003)(III.D.3), in a secondary analysis of Swartz et al (1999), reports that their research protocol guaranteed that all subjects received a minimum level of case management, but the intensity of case management and the provision of other services was driven by the locally developed treatment plan and was not subject to research control. Re-admission to hospital was significantly associated with the amount of service received indicating that the service component of the study was crisis oriented and perhaps not equal to the psychosocial outreach character of an ACT program.

**E. Conflating severity and chronicity with hospital-utilization outside of OCC influence (Table III.E.1–6).**—Six studies address this issue [Evidence Rank M

Sample-Weighted = 3.25]. OCC-patients are selected because they usually have histories of more and longer hospital admissions than other hospitalized patients and because of the severity of risk associated with their presenting conditions (Segal, Hayes, Rimes 2017a; Segal & Burgess, 2006b; Burgess, Bindman, Leese, Henderson, Szmukler, 2006). When comparing more severely ill OCC patients and to non-OCC patients, the former, given the severity of their illness and greater need of treatment, always begins and ends with more admissions and total hospital days. Zanni & Stavis (2007) (III.E.2) demonstrate this by showing that the OCC patients had a greater number of admissions per year and more inpatient days per year throughout their study than non-OCC patients did. Similarly, Kisely et al (2004) (III.E.6), though controlling for past experience, found that the OCC cohort had a greater rate of re-hospitalization than two comparison groups.

Patel, Matonhodze, Baig, Taylor, Szmukler, & David (2013) (III.E.3), illustrate another aspect of the severity of illness. Usually long-acting injectable (LAI) anti-psychotics are prescribed to non-compliant patients. Their study found that patients receiving LAI antipsychotics were in fact more likely to have longer periods on OCC, a fact partially confirming their lack of treatment compliance.

The primary criteria for OCC placement includes threats to health and safety manifested in dangerous aggressive behavior, denial of treatment need and lack of insight as to one's mental illness. Castells-Aulet et al (2015) (III.E.4) built their case-control study by matching cases on socio-demographics and previous hospital usage. Retrospectively, they found no difference in use of hospital. Yet the OCC group were significantly more aggressive and included more treatment deniers, indicating that they were at greater risk for hospital use. While “no difference” is a failure to find a difference, when there is no difference between a more and less disturbed population that does appear to be a positive outcome. Similarly, in Lera-Calatayud et al's (2014) (III.E.5) pre/post study, primarily people with schizophrenia diagnoses experienced the reduced use benefit.

**3.4 Studies Generalizable to a Subset of OCC-Patients (see Table IV)**

Ten studies considered in Table IV [Evidence Rank M Sample-Weighted = 3.58] involve enrollment procedures or analyses limiting their results and conclusions to special circumstances and/or characteristics of OCC subgroups.

**A. Patients clinicians believed to be eligible for brief oversight to test stability ((Table IV.A.1) [Evidence Rank M Sample-Weighted = 5.00].**—Burns,

Rugkása, Molodynski, Dawson, Yeeles, Vazquez-Montes, Voysey, Sinclair, & Priebe (2013) randomized patients into two forms of OCC. They contrasted short-term conditional release designed “to test patients’ stability in the community before discharging them to voluntary status (median duration: 8 days)” vs. fixed longer-term-OCC. Patients only participated in the study after the responsible clinician had determined that the patient was ready for a stability-test where oversight might be brief. Responsible use of this clinical mechanism would have dictated that approving clinicians allow participation for only patients believed to qualify for the brief test. Thus, clinician’s judgement of whether patients believed to be only in need of brief care without extended oversight is tested. This selection process, however, would have excluded patients thought to be in need of longer-term OCC supervision. The study’s failure to find differences between groups on adverse outcomes, other than the duration of supervised time, might be conceived as lending support to the clinician’s judgment of a patient’s qualification for a “brief” test of community care. However, the extent of patient crossover between conditions, 25% needed reassignment to the longer term OCC, challenges this conclusion. The study seems to support an argument for increased flexibility in the assigned duration of OCC and for early review of conditional release.

**B. Patients not believed to be dangerous, i.e., those without a history of violence (Table IV.B.1–2) [Evidence Rank M Sample-Weighted = 3.00].**—Swartz, Swanson, Hiday, Wagner, Burns, & Borum (2001a) and Steadman, Gounis, Dennis, Hopper, Roche, Swartz, & Robbins (2001) randomized patients released to OCC who did not have a history of violence or recent violence. Thus, the results are only applicable to non-violent patients. They would not apply in jurisdictions with “hard” dangerous criteria limiting OCC to danger to self and others patients. Both studies excluded dangerous patients and, given their absence, found no differences in dangerous behavior at follow-up. The studies, however, would have increasing applicability in jurisdictions with statutes including gravely disabled and other more broadly defined threats to health and safety (c.f. II.D.2, where reduced victimization of OCC patients is reported for IV.B.1).

**C. Patients stabilized with OCC for 6 months to two years (see Tables IV.C.1–4 & II.C.4) [Evidence Rank M Sample-Weighted = 3.39].**—Swartz, Swanson, Wagner, Burns, Hiday, Borum (1999) (IV.C.3) compared hospital utilization of OCC-patients on orders for >180 days with other patients during a single follow-up year. By definition, the 180 day OCC group could have been hospitalized for only 180 days while the comparison group had a full year to be hospitalized. The authors arrived at unwarranted conclusions related to hospital utilization based on this artifact (Segal, 2001).

Segal & Burgess (2006a) (IV.C.2) addressed this selection problem by comparing extended OCC patients with extended community care patients not placed on OCC. It found that both groups had reduced inpatient days and that these reductions were associated with increased numbers of community treatment days.

Swanson, Swartz, Borum, Hiday, Wagner, & Burns (2000) (II.C.4) (reviewed above) improved the analysis of the data in IVC.3 (Swartz, Swanson, Wagner, Burns, Hiday, Borum (1999) by considering the role of OCC in preventing violence. It found reduced violence

among those individuals stabilized on OCC for six months compared to non-OCC comparison patients adding credence to the use of longer-term-OCC. Swartz, Swanson, Wagner, Burns, & Hiday (2001b) (II.E.3, reviewed above) also found 6 month OCC experience associated with increased medication compliance. Apparently, the patients in these studies were stabilized on an OCC regimen and/or orders were renewed to help maintain that stability.

Wagner, Swartz, Swanson, & Burns (2003) (IV.C.5) considered factors predicting service utilization among patients assigned to OCC and renewed for 6 months. They found that the amount of outpatient services received was associated with crisis (arrests and hospital re-admissions). Regardless of OCC duration, psychiatrist (medication management) visits were the emphasized treatment contacts. Medication non-compliance was the most significant predictor of the amount of service use among the OCC patients. Those patients renewed for 6 months of OCC had greater need, received more services and a greater diversity of services.

**D. Early-Intervention-OCCs (Table IV.D.1).**—Many OCC jurisdictions limit OCC-eligibility to patients with multiple and extended periods of hospitalization. Segal & Burgess (2006d) (IV.D.1) [Evidence Rank M<sub>Sample-Weighted</sub> = 3.00] reported on OCC patients experiencing their first hospitalization during a ten-year period. The results showed lower subsequent hospital-utilization, though also indicated this group had more community supports.

**E. Community-Initiated-OCCs (Table IV.E.1).**—Segal & Burgess (2008) (IV.E.1) [Evidence Rank M<sub>Sample-Weighted</sub> = 3.00] considered separating OCC-use as a form of parole after hospitalization from probation (diversion from hospital). Their study found that probationary-OCC was significantly associated with reduced subsequent inpatient days compared to individuals with a “hospital initiated order” and a group with both types of OCCs. These study results as well as in IV.D.1 may simply reflect severity of illness levels in the comparison groups.

#### 4. DISCUSSION

This review investigated how and to what extent OCC has utility for accomplishing its statutory objectives specified in commitment laws across nations, jurisdictions, and over the last 30 years. Studies including direct health and safety outcomes generally indicate that OCC is associated with reducing mortality-risk, increasing access to acute medical care, and reducing risks of violence and victimization. They indicate that OCC generally enables reaching these objectives as a less restrictive alternative to hospitalization when community services are available, facilitates the use of community services by individuals refusing such assistance, and in the absence of adequate community care brings patients back to needed treatment in hospital preventing their engagement in behavior likely to disrupt their recovery efforts going forward.

Though, OCC is consistently associated with reduced all-cause mortality, disaggregating mortality risk by cause of death and interventions associated with OCC offers a more



complex picture—one perhaps explained in a comparison of the findings in II.A.1 and II.A.3. The later study covered the period from 1990–2000 and the former from 2000–2010 in Victoria Australia. In the first decade, Victoria offered the most enriched community services in Australia. Outpatient commitment days per 30 days at risk were associated with a 24% reduction in injury related deaths. Community treatment days per community care episode were associated with reducing mortality-risk, each day of service with reduced injury related death by 2 percent (Segal & Burgess, 2006c). In the second decade, Victoria had significant cuts its community services (Gerrand, 2005). II.A1 indicated that the cuts were 25% per episode of community care. While the overall all mortality rate was reduced in association with OCC, a 33% reduction in the probability of death due to assault, and undetermined intent compared with those who had perpetrated a similar crime not offered OCC (Segal, et al 2019), this positive was offset by an increased mortality-risk of 32% due to self-harm. Community treatment days during this second decade showed no association with reduced injury related risk (Segal, Hays, & Rimes, 2017b). It would seem that OCC-assisted hospital returns reduced the risk of involvement in violent crime and consequently mortality risk for those threatened with such involvements, while those with suicide potential, perhaps less visible without community contact, were left without sufficient community service to address their need. The importance of OCC in involving service refusers with service is illustrated by Kisely et al's(2013b) (II.A.2) finding that after controlling for service utilization there was no difference in mortality-risk between their OCC and non-OCC cohorts.

OCC was associated with increasing access to acutely needed medical care. However, once entry is secured, there was a failure to find differences in access to procedures between OCC and other hospitalized patients with health conditions requiring emergency room or hospital admission. Such life threatening conditions are likely to mandate a procedure once a patient is able to get to the hospital. Thus, it would seem that the role of OCC is facilitating access.

Of the eleven studies addressing violence and crime, nine found OCC associated with reduced risks. Both studies failing to find a difference between OCC and non-OCC patients, reported that their OCC samples spent more time in locked supervision than their comparisons during the study period (Pollak et al, 2005, II.C.4; and, Hiday, Scheid-Cook, 1987, 1989, & 1991, II.C.9). Thus, their OCC samples were not free to commit such crime and their “no difference” findings might be attributable to the use of OCC to bring people back to hospital in order to prevent such involvement. Segal et al (2019) found OCC associated re-hospitalization accounted for a 13% reduced risk of major crime perpetration.

Both victimization studies showed positive OCC effects.

Studies of medication compliance and service use need to be considered in view of the fact that OCC patients are by definition medication non-compliant and service refusers prior to their OCC assignment. Study results indicated that OCC patients are likely to be as compliant with medication and service use as hospitalized non-OCC patients during their period of OCC assignment, and perhaps less compliant than non-OCC patients post OCC. The finding that individuals are more compliant when maintained on OCC for more than six months seems to be a result of selection for renewal of OCC, as opposed to those patients

who do not meet the standard for renewal of their OCC and thus return to their old habits of service non-compliance.

OCC's LRA effect in its capacity as a form of parole is associated with reduced inpatient-episode duration by enabling early release. As a form of probation, diversion from hospitalization, OCC is used infrequently. When used, however, it is associated with saving hospital-days; though, no study adds estimates of such saving to their calculations of reductions in inpatient episode duration. Even without consideration of diversion savings, OCC appears to provide a significant LRA effect.

While OCC assignment shortens the duration of an OCC associated hospitalization, its effect on "total inpatient days" and "readmissions" post OCC is not a simple one. Studies consistently indicate that, within a fixed period, if the OCC is coupled with ACT or some form of aggressive case management it will be associated with enhancing the outpatient program objective of reducing the risk of re-hospitalization. In these jurisdictions, OCC is associated with an enhanced effect in ACT programing. ACT aggressively pursues patients; OCC compels participation with the ACT team. In jurisdictions where outpatient services are more limited, services appear to become crisis-oriented and the potential of OCC is in facilitating rapid return to hospital for needed treatment. In this situation, OCC is associated with increased "total hospital days" and readmissions when contrasted with a comparison group. In pre/post-designed studies, OCC patients generally show a decrease in hospital days and admissions between the pre/post periods, reflecting a combination of the effects of deinstitutionalization, regression to the mean, and facilitated early release and diversion attributable to additional OCC associated inpatient episodes following the initial OCC episode. In Victoria Australia, almost half the OCC patients had more than one OCC assignment. In pre/during/post studies, the OCC-patients show the reductions in hospital utilization during when compared to the pre-period, but generally show an increase in the post-period.

In OCC comparison group studies, including two putative "RCTs", the OCC patients are more severely ill and non-compliant than their non-OCC contrast group (Segal, Hayes, Rimes 2017a; Frank et al 2019). In comparison group studies, despite matching on demographics and hospitalization history, independent clinical assessments indicate OCC patients are more symptomatic than non-OCC patients--especially with regard to symptoms that are likely to threaten health and safety (Segal, Hayes, Rimes 2017a). They are also more likely, because of their illness, to reside in neighborhoods that compound such threats (Segal, Hayes, & Rimes, 2019). Thus, bringing OCC patients to a "no difference" with a comparison group on OCC outcomes is likely a positive result, though technically "a failure to find an effect". It should not be considered a negative outcome as it has been reported in the literature since the expected effect is that OCC patients will under perform.

The studies in New York and Victoria best illustrate OCC effects in large statewide samples. They demonstrate the health and safety effects of OCC and illustrate the impact of community service on hospital utilization outcomes other than inpatient episode duration. New York's combination of ACT and OCC was associated with reduced total hospital days and admissions. The effect was greatest in the OCC/ACT group, second in the ACT and less

in the non-OCC/non-ACT groups. Victoria went in the opposite direction of reduced outpatient service contacts with the consequence of potentially fostering a crisis-oriented preventive system of care that has led to increases in hospitalization and total admissions enhanced by continued reductions in the availability of inpatient beds.

Studies measuring special OCC-circumstances, though the weakest (lowest ranked) in the evidence hierarchy), hold promises for better understanding of how to improve the use of OCC. They open hypothetical situations that, from a policy perspective, indicate that current advocacy is moving in a direction opposed to achieving the LRA-effects of OCC. Studies on extended-OCC seem to indicate that some patients may do better when placed on long term OCC, stabilizing them and keeping them out of hospital. This finding goes in the opposite direction of current human rights advocates who continue to push for shorter durations under OCC supervision. The United Kingdom trial (Burns, Rugkåsa, Molodynski, Dawson, Yeeles, Vazquez-Montes, Voysey, Sinclair, Priebe, 2013) may validate the use of increased psychiatric-discretion in determining the duration of OCC oversight. A Victoria study (Segal & Burgess, 2006d) seems to indicate potential for early intervention OCC as opposed to OCC's use only with individuals having long-term hospital histories. The final irony in this accumulated research is the almost complete absence of studies focused on community initiated OCC. OCC diversion is the ultimate hospital inpatient episode saving option and yet it is rarely used though, according to the one study available, it seems to hold promise of patient success (Segal & Burgess, 2008).

There is an international deinstitutionalization-dynamic largely driven by the economics of mental health care. Psychiatric hospitals improve their services and reduce their beds, becoming too expensive to sustain. In order to relieve themselves of this economic burden, jurisdictions develop an extensive array of community services usually based on an ACT model that in comparison to the psychiatric hospital looks inexpensive and is reassuring to the public that patients will receive adequate oversight in the community. Once the psychiatric hospital is closed, however, the costs of community care have no favorable comparison-costs. Managed care, focused on the economics of health delivery encourages mental health systems to reorganize around general hospital integrated-care (Segal & Jacobs, 2013). The mandated objectives of OCC, protecting safety of self and others from the behavioral consequences of severe mental illness, are displaced by the goal of "prevention of hospitalization", stigmatizing hospital-use. This empowers factions opposing hospitalization based on human rights concerns and those groups committed to cost-savings in mental health services to cut beds (Slade & Goldman (2015). Reduced availability of general hospital beds creates pressure for earlier discharge to accommodate new acute patients (Torrey, Fuller, Geller, Jacobs, 2012). In the absence of ACT or equivalent-case-management, hastened discharge leads to a high probability of readmission for symptoms associated with the original hospital-stay (Segal, Watson, & Akutsu, 1998). The "revolving-door" effect is exacerbated in managed-care-systems where hospitals are paid a fixed fee per admission—profiting when admissions are short and re-hospitalization is billable as a new encounter. OCC-assignment, in the absence of adequate community-care, carries out its mandate to enable the provision of needed-treatment: crisis-returns to hospital, the default requirement in the absence of adequate-community-treatment (Segal, 2017). Critics, conflating outcome and treatment intervention, misrepresent this intervention as OCC's

failure to “prevent hospitalization”, making no mention of inadequate community-based treatment, cutbacks in service associated with concentrating care in the general hospital complex, the financing incentives for readmissions (Patel, 2008), and the dire behavioral risks to long-term recovery potentially avoided with OCC-supervision. It is time to add greater legitimacy to both the need for expanded community and hospital-based resources for needed-treatment as well as less restrictive alternatives to the criminal justice system, which is the next stop for many denied access to inpatient care when they need it (Talbot, 2017). Future OCC research needs to explicate the service and resource context of the jurisdiction in which it occurs and perhaps where the system of care is with respect to this international deinstitutionalization dynamic.

## 5. LIMITATIONS

There is no absolute causal certainty in this research. There are problems of reliability and validity throughout the behavioral science literature. Research is an ongoing if flawed effort to understand our complex reality. Variance in the implementation of the law and the research effort is always an issue contributing to failure in determining the effectiveness of OCC. The studies herein reviewed are varied in design and quality and discussed as though each added an equivalent piece of information. However, studies with valid outcome criteria, on average, rank highest in the evidence-hierarchy based upon sample size and design principles. Within each study grouping, studies show consistent findings led by studies higher in the evidence-hierarchy and supported by studies with lesser evidence-certainty. All studies provide associations. None of them, even the putative “RCTs”, insures causal certainty. Some studies may unfortunately have been overlooked. Most of the epidemiological studies use administrative data and several rely on medical record information that may be less reliable than information gathered in designed research. While the studies reviewed do not represent all OCC jurisdictions, they do include nine in the U.S., four in Australia, three in Canada, four in the UK and two in Spain.

OCC is not a great solution. It takes decision power from an individual and as such may be disempowering, yet disempowering only for a period of high risk. In fact, the majority of individuals placed on orders view it as a positive contribution to their recovery (Borum et al., 1999). Finally, concentrating on OCC outcomes also seems to be a focus of concern that distracts from focusing on the treatment and mental health system limitations that it is designed to help the patient make maximum use of. The alternatives to “failure to find” reports that have been included herein should be viewed as starting points, hypotheses for new research not as proven facts. There are many questions regarding how OCC is implemented and could be improved that should guide future solutions.

## 6. CONCLUSION

Previous OCC-research reviews find variance in OCC study outcomes. Explaining that variance by focusing on OCC statutory objectives and contextualizing study results, this investigation finds a consistency in reported OCC outcomes. Studies confirm and replicate beneficial associations between OCC and direct measures of indicators of the amelioration of imminent threats to health and safety. They confirm a successful LRA effect associated

with using OCC across five countries, three of them commonwealth nations (3–4 jurisdictions in each) and nine jurisdictions in the United States.

## 7. GLOSSARY OF ABBREVIATIONS

<b>ACT</b>	Assertive community treatment, a form of intensive case management based on psychosocial intervention focused on maintaining severely mentally ill patients in the community
<b>AOT</b>	Assisted Outpatient treatment: Another name for outpatient civil commitment
<b>BER</b>	Berkeley Evidence Rating— Ranks comparison group studies according to an evidence hierarchy based on the quality of the study's design
<b>CTO</b>	Community Treatment Order
<b>ICC</b>	Involuntary inpatient commitment
<b>LRA</b>	Least Restrictive Alternative to psychiatric hospitalization
<b>MPR</b>	medication-possession-ratio
<b>NOS</b>	Newcastle-Ottawa Score. Ranks studies according to an evidence hierarchy based on the quality of the study's design
<b>OCC</b>	Outpatient civil commitment; Outpatient
<b>OPC</b>	Outpatient commitment
<b>OC</b>	Outpatient commitment, Assisted Outpatient Treatment
<b>RCT</b>	Randomized Controlled Trial

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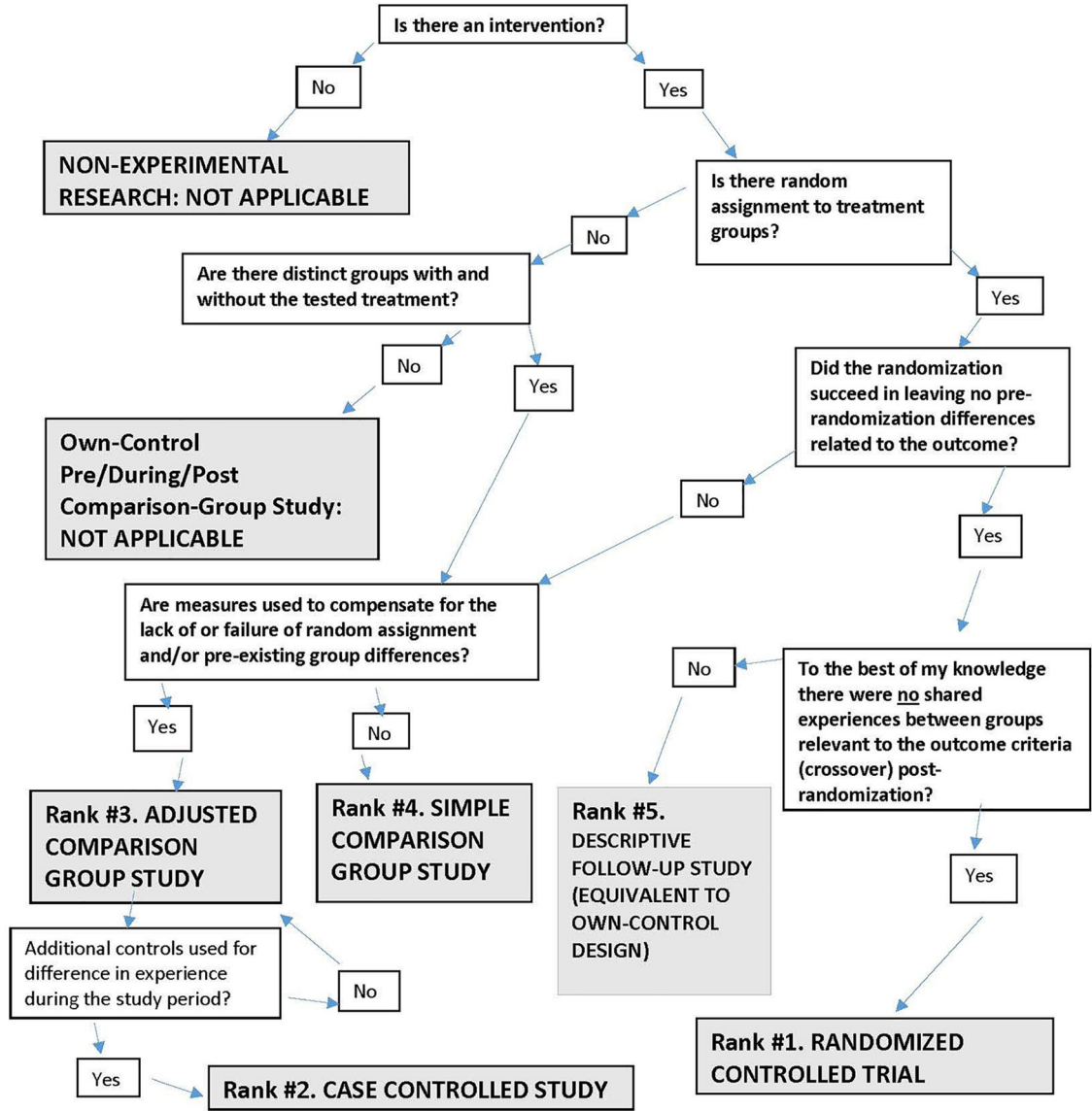
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**Figure 1. BER system of classifying comparison-group studies in the evidence hierarchy\*.**  
 \*Fig. 1 offers a flow chart representing the guidelines in Campbell & Stanley’s (1963) landmark text. It begins at the top of the page with a series of questions necessary to establish a study’s hierarchical rank based on the features of its implementation. When all questions in Fig. 1 can be answered “Yes” the study is ranked #1 as an RCT. When following the figure’s arrows and reaching a “No” answer, follow the alternate arrow path to a “yes.” If there is no path to a “Yes” answer, then you have reached the study’s characterization and rank. The top two ranks both follow a “Yes”.

**Table I:**

Evidence Ranking Supporting Positive Associations with OCC Assignment

Outcome	Number of Studies Addressing the Designated Outcome	Total Sample N	Combined BER and NOS Ranks *				
			Weighted Mean	Mean	Median	Mode	Range
<b>Validity Rank I Analyses</b>							
A. Mortality Risk	5	58,972	2.23	2.70	2.50	2.00	2-4
B. Access to Physical Health Care	2	33,029	2.00	2.00	2.00	2.00	2
C. Crime Against Persons, Violence, Suicide, Arrests	11	29,700	2.01	2.90	2.50	2.00	2-4
D. Victimization	2	27,797	2.00	2.00	2.00	2.00	2
E. Medication Compliance	10	12,510	2.68	2.95	3.00	2	2-5
F. Least Restrictive Alternative to Hospitalization	8	62,839	2.47	2.86	2.50	3.00	1-5
Validity Group I Study Outcomes	N <sub>Outcomes</sub> =38		M <sub>of Outcome Groups</sub> =2.23	2.56			
<b>Validity Rank II Analyses (Hospital &amp; Service Use Measures Following OCC-assignment)</b>							
A. Hospitalization and deinstitutionalization	1	1,558	3.00	3.00	3.00	3.00	3
B. Community service utilization during OCC period	2	17826	2.50	2.50	2.50	-	2-3
C. Admissions & Hospital Days When Accompanied by ACT & Enhanced Community Services	13	8,652	3.00	3.00	3.00	2 & 4	3-4
D. Admissions & Hospital Days When Accompanied by Reduced Community Service Access	3	27,899	2.33	2.33	2.00	2.00	2-3
E. Admissions and Hospital Days Conflated With Severity and Chronicity	6	28,702	3.25	3.25	3.75	4.00	2-4
Validity Group II Study Outcomes	N <sub>Outcomes</sub> = 25		M <sub>of Outcome Groups</sub> =2.96	2.96			
<b>Analyses Generalizable to a Subset of OCC Patients</b>							
A. Patients + clinicians believe eligible for brief oversight to test stability	1	336	5.00	5.00	5.00	5.00	5
B. Patients not believed to be dangerous, i.e., those without a history of violence	2	406	3.00	3.00	3.00	3.00	3
C. Patients Stabilized With OCC for 6 Months to Year	5	1,667	3.39	2.83	3.00	-	2-3.5
D. Early Intervention OCC	1	24,973	3.00	3.00	3.00	3.00	3
E. Community Initiated OCC	1	8,879	3.00	3.00	3.00	3.00	3
Validity Group III Study Outcomes	N <sub>Outcomes</sub> = 10		M <sub>of Outcome Groups</sub> =3.58	3.37			

\* In order to enable a causal ranking for a given outcome area in Table 1, the NOS ranks were reversed to match BER rank ordering (NOS=9 was coded 1, 8 coded 2...5 coded 5). When only one rank in either the NOS or BER system was available that rank was accepted. When both systems ranked a study, the average rank was used.

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**Table II**

Studies with Measured Outcomes that Directly Address Outpatient Commitment's Legal Mandate: Providing Needed-treatment to Protect Health and Safety with a Least Restrictive Alternative to Hospitalization.

<b>A. Mortality Risk and Number of Deaths</b>									
<b>Study</b>	<b>Jurisdiction</b>	<b>Contrast Samples</b>	<b>Outcome Criteria</b>	<b>Design &amp; Analysis Features</b>	<b>Summary of finding(s)</b>	<b>"No impact" expectation</b>	<b>Berkeley Evidence Rank (BER)<sup>†</sup></b>	<b>Newcastle-Ottawa Score (NOS)</b>	<b>NOS re-Ordered</b>
II.A.1. Segal, Hay s, Rimes 2017b, <i>Psychiatric Services</i> 68(12): 1247–1254.	Victoria, Australia	CTO N-11,424 vs. Non-CTO = 16,161	Mortality Risk	Case Control Design: Propensity Score Adjustment (Regression); Confounding Factor Adjustment (via Matching and Regression); 12-year risk period	CTO placement was associated with a 15% reduced mortality risk and CTO placement interacting with access to acute medical care was associated with a 22% reduced risk of non-injury related death. CTOs, when used with individuals who had perpetrated a crime against persons, accounted for a 33% reduction in their probability of death due to assault, self-harm, and undetermined intent compared with those who had perpetrated a similar crime not offered a CTO. On average, CTOs saved 3.8 years of life for men and 2.4 years of life for women.	> mortality risk	2	8	2
II.A.2. Kisely et al. <i>CMAJ</i> , 2013b, 185(1): E50–6.	Western Australia	CTO N-2958 vs. Non-CTO matched control N-2958	Mortality Risk	Case Control Design: 2-year follow-up; Confounding Factor Adjustment (via Matching and Regression)	CTO associated with 38% reduced all-cause mortality risk. No difference between groups after control for contacts with health services in the community.	> mortality risk	2	8	2
II.A.3. Segal & Burgess 2006c <i>Psychiatric</i>	Victoria, Australia	CTO N-8,879 vs Non-CTO N-16,094	Mortality Risk	Case Control Design; Propensity Score	CTO-assignment associated with 14% reduced	> mortality risk	2	7	3

<i>Services</i> 57:1607–1613.				Adjustment (Regression); Confounding Factor Adjustment (via Matching and Regression); 10-year risk period	mortality-risk among psychiatrically hospitalized patients.				
II.A.4. Pollak et al 2005 <i>Psychiatric Services</i> 56(7):863–866.	Portland, Oregon, U.S.A.	OCC N=150; Non-OCC=140	Number of deaths in 3-year follow-up period due to suicide and unnatural causes.	Adjusted Comparison Group Design: Brief OCC plan involving contract with patient. Compared patients assigned to the plan with patients who for some reason (refusal, dementia, or “some logistical reason) (e.g. resource availability) were eligible but were not selected.	While the groups may have been equivalent in character, the OCC group had more subacute (locked residential) admissions than those in the comparison group (overall admissions, 33 percent compared with 15 percent; involuntary admissions, 19 percent compared with 8 percent; and voluntary admissions, 19 percent compared with 9 percent).	> number of deaths, given that the CTO group spent significantly more time in locked residential supervision.	3	5	5
II.A.5. Power, 1992 unpublished, reported extensively in Churchill et.al, (2007).	Victoria Australia	CTO N=104 vs. Non-CTO N=104	Number of deaths in follow-up period.	Adjusted Comparison Group Design; Confounding Factor Adjustment (via Matching)	Lesser number of deaths in CTO group	> number of deaths	3	Not Ranked	

**B. Access to Imminently I deeded Physical Health Diagiloses and Procetlures**

Study	Jurisdiction	Contrast Samples	Outcome Criteria	Design & Analysis Features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
II.B.1. Segal, Hays, Rimes 2018a. <i>Social Psychiatry &amp; Psychiatric Epidemiology</i> 53(6): 597606.	Victoria, Australia.	CTO N=11,424 vs. Non-CTO = 16,161 vs. Outpatients without CTO or hospitalization N=12,229	Access to a diagnosis of physical illness requiring acute medicalcare	Case Control Design; Propensity Score Adjustment (Regression); Confounding Factor Adjustment (via Matching and Regression); 12-year risk period;	CTO-supervision associated with access to physical health care in acute care settings.	< access to physical health care	2	Not Ranked	2
II.B.2. Kisely, et al, 2014, <i>Canadian J. Psychiatry</i> 59(1):54–58.	Western Australia	CTO N=2757 vs. non-CTO N=2687	Medical Procedures	Case Control Design	No difference in access to procedures.. CTO patients had less access	< access to physical health care..	2	Not Ranked	Not Ranked

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thus no significant difference in the number of procedures may be an indication that once you can access a diagnosis you get a procedure.

### C. Perpetration of Crime Against Persons, Violence, and Suicide-risk

Study	Jurisdiction	Contrast Samples	Outcome Criteria	Design & Analysis Features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
I.I.C.1. Segal, Hays, Rimes, 2019, <i>European Psychiatry</i> . 2019: 56, 97–104.	Victoria, Australia.	CTO = 11,424 vs. Non-CTO = 16,161	Risk of initial perpetration of a major crime against a person and repeating such crimes.	Case Control Design; Propensity Score Adjustment (Regression); Confounding Factor Adjustment (via Matching and Regression); 12.4-year risk period	CTO supervision is associated with reduced risk of initial and repeat involvement in major crimes against persons. CTO-assignment was associated with reduced safety-risk: 17% in initial-perpetrations and 22% for repeat-perpetrations. Each ten-community-treatment-days in interaction with CTO-assignment was associated with a 3.4% reduced-perpetration-risk. CTO-initiated-re-hospitalization was associated with a 13% reduced-initial-perpetration-risk.	> involvement in crimes	2	Not Ranked	2
I.I.C.2. Link et al 2011 <i>Psychiatric Services</i> 62:504–508.	New York, USA	OCC N=86 vs. Non-OCC N=97	Risk of arrest	Case Control Design; Propensity Score Adjustment (Matching); Confounding Factor Adjustment (via Matching and Regression)	OCC assignment associated with reduced arrest-risk. Non-OCC patients had double the risk of arrest in the same time-period.	for during vs before & after;; > for the comparison group	2	8	2
I.I.C.3. Phelan et al 2010 <i>Psychiatric Services</i> , 61:137–143.	New York, U.S.A.	OCC N=76 vs. Non-OCC N=108	Serious violence perpetration and suicide risk.	Case Control Design; Propensity Score Adjustment (Matching);	Serious violence perpetration and suicide risk were lower in the OCC group	> violence perpetration and suicide risk	2	8	2

				Confounding Factor Adjustment (via Matching and Regression)	than in the comparison group.					
Author Manuscript	II.C.4. Pollak et al 2005 <i>Psychiatric Services</i> 56(7):863–866.	Portland, Oregon, U.S.A.	OCC N=150; Non-OCC=140	Number of arrests in 3-year follow-up period	Adjusted Comparison Group Design: Brief OCC plan involving contract with patient. Compared patients assigned to the plan with patients who for some reason (refusal, dementia, or “some logistical reason”) (e.g. resource availability) were eligible but were not selected.	While the groups may have been equivalent in character, the OCC group had more subacute (locked residential) admissions than those in the comparison group (overall admissions, 33 percent compared with 15 percent; involuntary admissions, 19 percent compared with 8 percent; and voluntary admissions, 19 percent compared with 9 percent).	> number of arrests, given that the CTO group spent significantly more time in locked residential supervision and was not able to be arrested during locked supervision..	3	5	5
Author Manuscript	II.C.5. Swanson et al 2000 <i>British J of Psychiatry</i> 176:324–331.	North Carolina, U.S.A.	OCC N=148 vs. non-OCC N=114	Incidents of violence reported from four sources: self-report, pick-up by police for assault on another person, family and case-managers	Case Control Design; 1-year risk period; Confounding Factor Adjustment (via Matching and Regression)	Lower incidence of violent behavior among subjects with 6 months of OCC	< violent behavior. Because 46 of the OCC subjects were preselected for violent behavior and such subjects were not included in non-OCC group	2	8	2
Author Manuscript	II.C.6. Vaughan et al 2000 <i>Australian &amp; New Zealand J of Psych</i> 34(5):801–8.	New South Wales, Australia	CTO N=123 pre, during, & post-CTO	Duration and level of behavioral disturbance of readmitted patients during or after continuation of CTO.	Own-Control Pre/post compared to during design.	Shorter duration of disturbed behavior during CTO vs Pre or Post CTO	duration of disturbed behavior	NA	7	3
Author Manuscript	II.C.7. O’Keefe et al 1997 <i>JNMD</i> 185: 409–411.	New Hampshire, U.S.A.	OCC N=26 two year pre/post study	Episodes of violence	Own-Control Pre/post design	Reduced episodes of violent behavior	episodes of violence	NA	6	4
Author Manuscript	II.C.8. Power, 1992 unpublished, reported extensively in Churchill et. al.	Victoria, Australia	CTO N=125 vs Non-CTO N=104	Violence	Simple Comparison Group Design, Pre/post design, CFA	Reported reduction in violence by 63% during CTO, although violent behavior increased post CTO.	During Post	4	Not Ranked	Not Ranked

II.C.9. Hiday and Scheid-Cook <i>IJLP</i> 1987 10:215–232; 1989; <i>H&amp;CP</i> 1991; <i>J Nerv Ment Dis</i> 179:8388.	North Carolina, U.S.A.	OCC release from civil commitment hearing N=69 Involuntarily Hospitalized from civil commitment hearing N=84 Released after civil commitment hearing N=12	Dangerous behavior; arrests	Simple Comparison Group Design	No difference between OCC and IVH groups	> involuntary hospital admission	4	5	5
II.C.10 Erickson, 2005. <i>Behav Sci Law</i> 23: 627–45.	New York, U.S.A.	Review of 100 OCC patients, Pre vs during OCC, Average OCC duration: 18.05 months, with a range of 3–57 months.	Arrests and Incidents of interpersonal aggression (i.e. domestic violence, threats, and assaults)	Pre period vs during OCC	Notable reduction in the number of arrests during OC treatment across all types: violent, nonviolent, and nuisance crimes. Also there was a reduction in the incidence of interpersonal aggressions including: domestic violence, threats, and assaults.	Arrests and incidents of interpersonal aggression	NA	8	2
II.C.11 Hough & O'Brien 2005 <i>Psychiatry, Psychology and Law</i> . 12(2):411–423.	South Australia	CTO N=553	Crime and violent crime rates	Pre/During/ Post CTO comparison.	Significantly reduced rate of offending per person (50% reduction) and of violent offending per person while on a CTO as well as in the year following discharge compared with the year before being issued a CTO	Crime and Violent Crime Rate	NA	Not Ranked	Not Ranked

#### D. Victimization

Study	Jurisdiction	Contrast Samples	Outcome Criteria	Design & Analysis Features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
II.D.1. Segal Hays Rimes 2019, <i>European Psychiatry</i> . 2019; 56, 97–104.	Victoria, Australia.	CTO N=11,424 vs. Non-CTO N=16,161	Risk of initial victimization by a major crime against a person and of repeated victimization.	Case Control Design; Propensity Score Adjustment (Regression), Confounding Factor Adjustment (via Matching and Regression); 12.4-year risk period	CTOs were associated with reduced risk of initial and repeat victimizations.	> Victimization	2	Not Ranked	Not Ranked

I.I.D.2. Hiday et al 2002 <i>Am J Psych</i> 59:1403–11.	North Carolina, U.S.A.	OCC N= 85 vs. Non-OCC=88 vs Patients with history of serious violence N=39.	Victimization	Case Control Design; OCC vs Non-OCC groups. Regression analysis.	OCC group were significantly less likely than Control group to experience any criminal victimization.	> Victimization	2	Not Ranked	Not Ranked
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#### E. Medication Adherence and Outpatient service compliance

Study	Jurisdiction	Contrast Samples	Outcome Criteria	Design & Analysis Features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
I.I.E.1. Busch et al. 2010 <i>Psychiatr Serv</i> 61:10001005.	New York, U.S.A.	OCC= 2,847; ACT alone=2564; Neither OCC or ACT=2351	Medication Possession Ratio (MPR)	Case Control Design	CTOs associated with a greater increase in MPR	increase in MPR	2	Not Ranked	Not Ranked
I.I.E.2. Van Dorn et al. 2010 <i>Psychiatr Serv</i> , 61(10), 982–87.	New York, U.S.A.	OCC=3,576	Medication compliance rate	Own-Control Pre/post Design	OCC duration of 6 months or more were significantly associated with medication compliance.	< medication compliance during. Post	NA	6	4
I.I.E.3. Pollak et al 2005 <i>Psychiatric Services</i> 56(7):863–866	Portland, Oregon, U.S.A.	OCC N=150; Non-OCC=140	Use of psychotropic medications in 3-year follow-up period	Adjusted Comparison Group Design: Brief OCC plan involving contract with patient. Compared patients assigned to the plan with patients who for some reason (refusal, dementia, or “some logistical reason”) (e.g. resource availability) were eligible but were not selected.	Though having a previous history of being less likely to adhere to psychotropic medications, patients in the OCC plan used significantly more psychotropic medications during the study (OCC=75%, Comparison Group=63%; p=.03)	< use of psychotropic medications, given past history of nonadherence.	3	5	5
I.I.E.4. Swartz et al. 2001 <i>Journal of Nervous and Mental Disease</i> 189:583–592.	North Carolina, U.S.A.	OCC=145; non OCC 113.	Medication compliance	Case Control Design	OCC duration of 6 months or more and intensive services were significantly associated with medication compliance.	increase in medication compliance	2	Not ranked	Not Ranked
I.I.E.5. Ozgul and Brunero 1997 <i>Australasian Mental Health Rev</i> 20:70–83.	South West Sydney, Australia	CTO N=46	Neuroleptic medication dosage	Own-Control Pre/During/ Post Pre-Post Design	Reduced dosage; increased medication compliance.	dosage increase	NA	7	3

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II.E.6. Power, 1992 unpublished, reported extensively in Churchill et.al.	Victoria, Australia	Two studies: 1. CTO N=125 2. CTO N=104 vs. Non-CTO N=104	Medication compliance	1. Own-Control Pre-During-Post Design 2. Adjusted Comparison Group Design, CFA(Matchin)	1. Medication compliance changed from poor to good during CTO but declined again post CTO. 2. No difference in medication compliance between CTO vs Non-CTO	1. < medication compliance during. Post undeterminable CTO. 2. CTO < Non-CTO	NA 3	Not Ranked Not Ranked	Not Ranked Not Ranked
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II.E.7. Hiday and Scheid-Cook <i>IJLP</i> 1987; <i>H&amp;CP</i> 1991; <i>J Nerv Ment Dis</i> 179:83–88, 1991.	North Carolina, U.S.A.	OCC release from hearing N=69 IHV from hearing N=84 Released hearing=12	Medication compliance; CMHC visits; general compliance	Simple Comparison Group Design	OCC group did better on all measures	medication refusals and non-compliance	4	5	5
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II.E.8 Erickson, 2005. <i>Behav Sci Law</i> 23: 627–45.	New York, U.S.A.	Review of 100 OCC patients, Pre vs during OCC	Compliance with medication, therapy, and substance abuse treatment	Pre period vs during OCC		Compliance	NA	8	2
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II.E.9. O'Brien et al 2009 <i>Community Ment Health J</i> 45:415–419	Ontario, Canada	N=84 patients issue a CTO during a three year period	Engagement with case Management and housing services	Pre/Post comparison of engagement.	Patients previously registered but unengaged with services increased their engagement with both case management and housing services	engagement with services	NA	7	3
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II.E.10 Dye, et al., 2012, <i>Psychiatrist</i> 2012 36: 298–302	Suffolk, U.K.	N=21 patients during two year follow-up period	Engagement with medication and service	Simple follow-up	Patients evidenced significantly increased engagement with treatment. They moved from an average rating indicating "minor engagement (some appointments attended and doubtful adherence to medication) to ratings indicating good engagement (i.e. most appointments attended and generally adherent to treatment)	engagement with services	NA	8	2
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II.E.11 Frank et al 2019, <i>Canadian J. of Psychiatry</i> , 2019,	Quebec, Canada	N= 367	Adherence to LAIs, average time , outside the hospital, and duration	Simple follow-up over five years	CTO and non-CTO patients did not differ with respect to demographics,	adherence to LAIs; time outside hospital,	NA	NR	NR
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of hospitalization

but CTO patients were significantly more severely ill. Following a CTO, adherence to LAIs increased over time ( $P < 0.001$ ). The average time the patients spent in the community, that is, outside the hospital, was significantly longer under a CTO, and the duration of hospitalizations was decreased.

inpatient episodes

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**F. Least Restrictive Alternative to Hospitalization: Duration of Inpatient Episodes**

Study	Jurisdiction	Contrast Samples	Outcome Criteria	Design & Analysis Features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
II.F.1. Segal Hays Rimes 2017a, <i>Psychiatric Services</i> 68(12): 1247–1254.	Victoria, Australia	CTO=11,424 vs.Non-CTO = 16,161	Average inpatient episode duration	Case Control Design; Propensity Score Adjustment (Regression), Confounding Factor Adjustment (via Matching and Regression); 10-year risk period	Inpatient days reduced per inpatient episode associated with CTO placement.	> number of inpatient episode days	2	Not Ranked	Not Ranked
II.F.2. Kisely et al. 2013 <i>J Psychiatry Research</i> 47:650–656.	Western Australia	CTO N=2,958 vs. Non-CTO N=2,958	Hospital Episode Duration; Community service.	Adjusted Comparison Group Design	Hospital Episode duration decrease; community service increase.	Inpatient episode days; Community outpatient contacts	3	Not Ranked	Not Ranked
II.F.3. Segal and Burgess 2006b <i>Psychiatric Services</i> 57:16001606.	Victoria, Australia	CTO N=8,879 vs. Non-CTO N=16,094	Hospital Episode Duration; Community service.	Case Control Design, Propensity Score Adjustment (Regression), Confounding Factor Adjustment (via Matching and Regression); 12-year risk period	Episode duration decreased and increased community service in association with CTO-assignment.	Hospital Episode Duration; Outpatient Service Provision	2	7	3
II.F.4. Swartz et al. 2010, <i>Psychiatric Services</i> , 61(10), 976–981.	New York, U.S.A.	CTO N=3,576	Admission length; Number of admissions; Community service use	Own-Control During-Post Design During-post study	CTOs associated with reduced admission length, number of admissions, and increased	> Admission length; Undeterminable for Number of admissions; < Community service use.	NA	5	5

						community service use				
II.F.5. Hunt et al. 2007 <i>Can J Psychiatry</i> 52(10):647–655.	Toronto, Canada	CTO N=224 vs. Non-CTO N= 92	Admission length; Number of admissions; Community service	Simple Comparison Group Design	CTO associated with reductions in hospital days and admissions.	< reduction in number of hospital days; < reduction in number of admissions	4	6	4	
II.F.6. Segal et al.2009, <i>Psych Services</i> 60(1):94–99. Reanalysis of Kisely et al 2005 <i>Psychol Med</i> 135767. 1	Western Australia	CTO N= 129 vs. Non-CTO N= 117	Admission length	Adjusted Comparison Group Design, CFC (Matching and Regression)	Reduced admission length	> number of days per admission	3	8	2	
II.F.7. Muirhead et al. 2006 <i>Aust NZ J Psychiatr</i> 40:596–605.	Victoria, Australia	CTO: 94	Admission length; Admissions; Community service use	Own-Control Pre-Post Design	CTO <u>period</u> associated with reduced admissions, and reduced admission length, reduced crisis team referrals.	admissions, length and crisis team referrals	NA	9	1	
II.F.8. Van Putten, Santiago, Berren 1988 <i>Hosp Comm Psychiatry</i> 39(9) 953958.	Arizona, U.S.A.	Pre-OCC N= 133 vs. 1 <sup>st</sup> 6-Months of OCC N=104 vs. 2 <sup>nd</sup> 6-Months of OCC N=147	Admission length; Inpatient length of stay prior to and after initiation of OCC-law.	Own-Control Pre-Post Design	Reduced admission duration	admissions	NA	Not Ranked	Not Ranked	

<sup>†</sup>See Figure 1 for determinants of hierarchical rank of study

Table III

Hospital Admission, Hospital Day Accumulations, and Service Utilization Outcomes Conflated with Resource Availability, Severity, and Chronicity

A. Hospitalizations and Deinstitutionalization: Reports conflating utilization with hospital bed reductions									
Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS order
III.A.1. Taylor et al 2015 <i>BIPsych Bulletin</i> 39(5): 1–3.	Scotland	CTO N=1558	Number of bed-days Pre vs post CTO.	Own Control Pre-Post Design	Reduction of bed-days by 40%.	Bed days. < However is undeterminable because between 1997/98 and 2006/7 the total number of psychiatric inpatient beds was reduced by a third (Audit Scotland report, 2009). From 2007–2012, it fell another 26%. During the same period, duration of stay decreased (see ISD hospital bed numbers currently published for 2004/05 to 2013/14).	NA	7	3
B. Reports on CTO tenure: community-based service utilization, re-hospitalization, and duration of CTO									
Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS order
III.B.1. Harris et al 2018, <i>Australia NewZealand J. Psychiatry</i> 1–8.	New South Wales, Australia	CTO N=5548 vs. Non-CTO N=11,096	Community service utilization; Risk of Readmission Admissions; Days to first Readmission; Community treatment days per month; Days in Hospital.	Case Control Design; Propensity Score Adjustment	Lower Risk of re-admission, more community days to first readmission; fewer readmissions; More community treatment days.	Not determinable for: Re-admission, days to first admission, and number of admissions because shorter time, may indicate lack of available community care and delivery of needed treatment via readmission, time may indicate adequate use of community care. < community-based service/ care.	2	Not Rated	Not Rated



III.B.2. Segal and Burgess 2006a, <i>Int J Law Psychiatry</i> 29(6):525–534. Reprinted in <i>SocWk &amp; Health Care</i> 2006,43(2/3), 37–51.	Victoria, Australia	CTO=591 vs. Non-CTO N=591	Re-hospitalization ; Inpatient days; Community service use.	Adjusted Comparison Group Study; Propensity Score Adjustment (Regression), Confounding Factor Adjustment (via Matching and Regression); 10-year risk period	>6 month-CTOs associated with reduced number of admissions, inpatient days, and increased services.	Not determinable for hospital days & readmissions because each is dependent on the availability and adequacy of community treatment and the use of hospital to provide needed treatment in the absence of effective community treatment. < community-based service/ care.	3	6	4
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**C. OCC Jurisdictions Where Patients Were Assigned to Assertive Community Treatment (ACT) Teams, and/or Where Community Services Were Receiving Increased Support (Often Targeted at OCC-Patients).**

Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS order
III.C.1. Swartz et al. 2010 <i>Psychiatric Services</i> , 61(10), 976981.	New York	OCC N = 3,576 Non-OCC=2,025	Admissions; admission length; community service use; Medication Possession Ratio (MPR)	Adjusted Comparison Group Design	OCC associated with: Reduced admissions length, Reduced number of admissions, Increased community service use and increased MPR	< receiving MPR, community service use; > days hospitalized/ admissions	3	5	5
III.C.2. Hunt et al 2007, <i>Can J Psychiatry</i> 52(10):647–655.	Toronto, Canada	CTO N= 224 vs. Non-CTO N= 92	Admissions; Admission length; Community service use	Simple Comparison Group Design	CTOs associated with: Reduced admission length, larger reduction in number of admissions, and reduced community service use.	> Duration of admission > Number of admissions < community service use	4	Not Rated	Not Rated
III.C.3. Nakhost et al. 2012 <i>Can J Psychiatr</i> 57(6):359–365.	Quebec, Canada	CTO N= 72	Admissions; Admission length	Own Control Design; Four period comparison.	Reduced number of admissions in CTO index period	> Increased number of admissions	NA	Not Rated	Not Rated
III.C.4. O’Brien & Farrell. 2005 <i>Can J Pshchiatr</i> 50(1):27–30.	Ontario, Canada	CTO N= 25	Admissions; Duration of Admissions and Community service	Own Control Design; Pre-Post	CTO associated with reduced admissions, duration of admissions, and increased community service use	> admissions and duration of hospitalizations; < community service	NA	8	2

III.C.5. Rawala M, Gupta S 2014 <i>Psychiatr Bulletin</i> , 38, 13–18.	London, England	CTO N=37	Admission rates and bed occupancy	Own Control Design; Pre- Post	Reduction in admission rate	admission rate	NA	7	3
III.C.6. Rohland, et al 2000 <i>Admin &amp; Policy in Mental Health</i> 27(6): 383– 394.	Iowa, USA	OCC N=81	Outpatient visits; Admissions; Total hospital days	Own Control Design; Pre- Post	Increased outpatient service use associated with decreased in hospital admissions, total hospital days, length of stay.	admission rate and bed occupancy; < outpatient service	NA	8	2
III.C.7. Fernandez & Nygard 1990 <i>Psychiatr Serv.</i> 41(9): 10011004.	North Carolina	OCC N=1983	Admissions; Inpatient days	Own Control Design; Pre- Post	O	number of admissions	NA	8	2
III.C.8. Power, 1992 <i>unpublished, reported extensively in Churchill et. al.</i>	Melbourne, Australia	Two studies: 1. Pre/Post CTO N=125 2. CTO N=104 vs. Non-CTO N=104	Admissions, and duration of stay	1. Own Control Design; Pre- Post 2. Adjusted Comparison Group Design	1. Reduced number of admissions and inpatient days. 2. No different from control on number of admissions.	1. > admissions and duration 2. > admissions	Study 1. NA Study 2. 3	Not Rated Not Rated	Not Rate Not Rate
III.C.9. Geller et al 1997, <i>New Directions for Mental Health Services</i> (75):81–95. & 1998 <i>Administration &amp; Policy in Mental Health</i> 25(3):271–85.	Massachusetts, USA	OCC N=19 (20 at 2- year follow-up) Non- OCC N=53 (N=57 at 2 year followup) Non- OCC N=19 best match (20 at 2-year followup)	Number of admissions and length of stay	Adjusted Comparison Group Design	Early on, within first 6 months of follow-up OCC group showed decrease in readmission s, bringing them to the level of the control samples. In the last quarter of the 24-month follow-up, the controls had significantly fewer admissions.	> admissions	3	5	
III.C.10 Ozgul and Brunero 1997 <i>Australasian Mental Health Rev</i> 20:70–83. (see also 2E.5 medicaton review)	Australia; SW of Sydney	CTO N=46	Number of Readmissions. Duration of stay	Own-Control Pre/During/ Post Pre-Post Design	Reduced admissions during first CTO; and reduced hospital stays. Post CTO, those who were admitted during 1 <sup>st</sup> CTO went back to same admission and duration frequency as	> Number of admissions and bed	NA	7	

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III.C.11. Zanni & Stavos 2007, <i>Am J Bioeth</i> 7(11):31-41.	Washington DC, USA	OCC N = 116	Number of admissions; Hospital Days	Own Control Design; Pre-Post	the pre-period. Reduced admissions per year pre vs post (p<.002); Non-significant (p=.061) positive trend in reduction in pre/post hospital days.	Indication that outpatient services had improved though not sufficiently to meet a court order.	NA	8	
III.C.12. Zanni & de Veau. 1986, <i>Hosp &amp; Comm Psych</i> 37:941-942.	Washington DC, USA	OCC N = 42	Number of admissions; Hospital Days	Own Control Design; Pre-Post	Reduced admissions per year pre vs post (p<.001); Non-significant (p=.28) positive trend in reduction in pre/post hospital days	Initiation of OCC. Indication of potentially enhanced outpatient services though no direct evidence of such.	NA	Not Rated	
III.C.13 Awara, et al., 2013 <i>J of Mental Health</i> . 22:2, 191-197.	South Essex	OCC N = 34	Number of admissions; Number of days in Hospital	Own Control Design; Pre-During-Post	Reduced admissions and days in hospital comparing pre year to during CTO and to post-CTO	> Number of admissions and bed days. Indication of attention to needed services. CTO was renewed after 6 months in 24 cases (71%) and expired or lifted in 10 patients (29%). Follow-up was fixed at a year for all. Therefore, post mean was dependent on during mean which reflected less admissions and hospital days.	NA	6	3

**D. Studies from Jurisdictions Where There Was a Report that Community Service Contacts Had Been Reduced or Where There Was a Report of Limited Community Based Service Resources.**

Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS order
3D.1. Segal Hays Rimes 2017a, <i>Psychiatric Services</i> 68(12):1247-1254.	Victoria, Australia.	CTO=11,424 vs. Non-CTO = 16,161	Total inpatient days Post-CTO hospitalizations. Service contacts	Case Control Design; Propensity Score Adjustment (Regression); Matching and Regression	Total inpatient-days post-CTO and number of admissions greater than comparison patients. Service contacts within episodes of community	Undeterminable since given cuts in community-based services, there is an expected increase in the hospital’s role in providing needed treatment for more disturbed patients.	2	Not Rated	Not Rated

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III.D.2. Christy et al 2009 <i>Int J Forensic Ment Health</i> 8:122– 130.	Florida, USA	OCC N=50	Number of admissions	Own-Control Design; Pre- Post	care decreased. Equivalent emergency room commitments in two pre and post periods	Undeterminable since given cuts in community- based services, there should have been an expected increase in the hospital's role in providing needed treatment for more disturbed patients. Unknown Missing Confounders.	NA	8	2
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III.D.3. Wagner et al Psychology, Public Policy, and Law 2003, 9(½), 145– 158.	North Carolina, USA	OPC N=135, vs Non- OPC N=129; Renewed vs Not-renewed	Average number of monthly service visits per subject	Adjusted Comparison Group Design with regression control. Exclusive of dangerous patients. Random assignment to OPC/Non- OPC failed by having more medication non- compliant and those lacking insight into their illness in OCC group.	Outpatient services received were only significantly associated with crisis (Arrests and Hospital admissions). Of potential study-year indicators of need for services, only the occurrence of psychiatric hospital readmission was associated with greater average frequency of service use.	< community services	3	Not Rated	Not Rate
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**E. Reports conflating severity, chronicity, and with CTO Hospital Utilization**

Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank(BER) †	Newcastle- Ottawa Score(NOS)	NOS Order
III.E.1. Burgess et al. 2006 <i>Psychiatric Epidemiology</i> 41:574–579.	Victoria, Australia	CTO N= 16,216 vs. Non-CTO N= 11,211	Admission rate.	Adjusted Comparison Group Design	CTOs associated with increased admission rate	Undeterminable since given cuts in community- based services, with expected increase in hospital role in providing needed treatment for more disturbed patients.	3	5	5
III.E.2. Zanni & Stavits 2007, <i>Am J Bioeth</i> 7(11):31–41.	Washington DC, USA	OCC N = 116 vs. Non- OCC N=78	Number of admissions; Admission length	Simple Comparison Group Design	OCCs associated with increased number of admissions and increased admission length.	It would appear that in comparing OCC vs Non- OCC the authors are making the argument that the OCC is	4	Not rated (Rated own control only)	Not Rate

III.E.3. Patel et al 2013 <i>J of Psychophar</i> 27 (7) 629–637.	South London, Endland	CTO N=188, patients prescribed long-acting injection (LAI), N=114 (60.6%) vs. oral medication, N=74(39.4%)	CTO duration	Simple Comparison Group Design	Long-acting injection vs oral medication at CTO outset associated with longer CTO duration.	more disturbed and in need of treatment rather than suggested in Maughan et al (2014) that this is evidence of OCC failure.  Undeterminable since given more disturbed CTO patients are more likely to be prescribed LAI than oral medications.	4	Not rated	Not Rate
III.E.4 Castells-Aulet et al 2015 <i>Psychiatric Bulletin</i> 39, 196–199.	Spain	OCC N=75 vs..Non-OCC=785	Number of admissions, ER visits, average hospital stays over two year period	Adjusted Comparison Group Design: Matched on socio-demographics and hospital history	No significant differences between two groups in admissions, length of stay, and ER visits.	CTO group though matched was different. It was admitted for significantly more aggressive behavior and treatment denial. Comparative outcomes should not have been expected. No difference with a treatment compliant group may be a positive comparison.	3	6	4
III.E.5 Lera-Calatayud, et al 2014 <i>International Journal of Law and Psychiatry</i> 37: 267–271.	Valencia, Spain	IOT N=140,	Number of Admissions and days in hospital	Pre/Post Comparison 12 Month	Significant reductions in admissions and hospital stays pre vs post.	Patients with schizophrenia experienced the most significant effect.	NA	8	2
III.E.6 Kisely et al 2004 <i>Br J Psychiatry</i> . 184:432–8.	Western Australia	CTO N=265; Non-CTO (matched) N= 224; N <sub>consecutive admissions</sub> =224 (total n=754).	Re-hospitalization rate	Case Control Design	The CTO group had a significantly higher readmission rate: 72% v. 65% and 59% for the matched and consecutive controls	Undeterminable given that CTO group going forward more ill than the control populations	2	8	2

<sup>†</sup>See Figure 1 for determinants of hierarchical rank of study.

Table IV

Studies Generalizable To A Subset of OCC/CTO patients—i.e., limited due to patient selection

<b>A. Findings from patients' clinicians believe eligible for brief oversight to test stability.</b>									
Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	"No impact" expectation	Berkeley Evidence Rank (BER) †	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
IV.A.1. Burns et al. 2013 <i>Lancet</i> 381(9878): 162 7–33.	UK	CTO N=167 vs. Section 17 OCC N=169	Admission rate; Time to readmission; Admission length; Community service use	Descriptive Follow-up Design	CTOs not associated with admission rate, time to readmission or admission length	Undeterminable, given crossover in follow-up period and unreported re-hospitalizations viewed as part of treatment process.	Rank # 5: reduced from Rank # 1, given between group crossover in follow-up period controls, and lack of pre/post controls in the analysis.	Not Rated	Not Rated
<b>B. Patients not believed to be dangerous, i.e., those without a history of violence</b>									
Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	"No impact" expectation	Berkeley Evidence Rank (BER) †	Newcastle-Ottawa Score (NOS)	NOS re-ordered
IV.B.1. Steadman et al 2001 <i>Psychiatr Serv</i> 52(3):330–336.	New York, USA	OCC N=78 vs. Non-OCC N=64	Re-hospitalization, arrest	Adjusted Comparison Group Design (Adjustments by incomplete/failed randomization)	OCC was not associated with admission rate, time to readmission or readmission length	Undeterminable, for re-hospitalization a conflated outcome criterion. Undeterminable re arrest, due to a lack of enforcement of OCC provisions for hospital return in the OCC group—a group including more severely disturbed patients.	Rank # 3: reduced from Rank # 1, due to incomplete randomization and given lack of pre and follow-up period controls	Not Rated	Not Rated
IV.B.2. Swartz et al 1999 <i>Am J Psychiatr</i> 156:1968-1975. & 2001 <i>Psychiatr Services</i> 52:325–329.	North Carolina, USA	OCC N=129 vs. Non-OCC N=135	Readmissions & post-CTO Hospital Days	Adjusted Comparison Group Design (Adjustments by incomplete/failed randomization)	No difference on hospitalization outcomes	Undeterminable, given conflated treatment outcome criteria. Incomplete randomization on confounders related to outcome-criteria-related. No-post period controls.	Rank # 3: reduced from Rank # 1, due to incomplete randomization and given lack of pre and follow-up period controls	Not Rated	Not Rated
<b>C. Patients Stabilized With a CTO for 6 Months to a Year</b>									
Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	"No impact" expectation	Berkeley Evidence Rank (BER) †	Newcastle-Ottawa Score (NOS)	NOS re-Ordered
IV.C.1. Nakhost et al. 2012 <i>CanJPsychiatr</i>	Canada	C TO N=72	Number of readmissions	Descriptive Follow-up Design; CTO experience	Long CTOs were associated with reduced	Undeterminable because a long CTO implies fewer	NA	Not Rated	Not Rated

57(6):359–365.				shor vs >6 months		number of readmissions.	hospitalizations based solely on time in community.			
IV.C.2. Segal and Burgess 2006a, <i>Int J Law Psychiatry</i> 29(6):525–534. (reprinted in <i>SocWk &amp; Health Care</i> 2006 ,43(2/3), 37–51.	Victoria, Australia	CTO=591 vs. Non-CTO N=591 both groups having experience d >6 months under community care at outset of comparison	Re-hospitalization; Inpatient days; Community service use	Adjusted Comparison Group Design, Propensity Score Adjustment (Regression), Matching and Regression	>6 month-CTOs associated with reduced number of admissions, inpatient days, and increased services compared to >6 month community care without CTO.	< hospitalizations ; < inpatient days and community services.		3	6	4
IV.C.3. Swartz et al 1999 <i>Am J Psychiatry</i> 156:1968–1975) & <i>Psychiatric Services</i> 2001 52:325–329 ***	North Carolina, USA	OCC N=129 vs Non-OCC N=135	Readmissions; hospital days	Adjusted Comparison Group Design Exclusive of dangerous patients. No control for failed randomization —i.e. more medication non-compliant and those lacking insight in their illness in OCC group.	Extended OCC was associated with positive outcomes both measures	Undeterminable for re-hospitalizations : because a long CTO requires fewer hospitalizations solely on time in community. < community services		3	Not rated	Not Rated
IV.C.4. Munetz et al 1996 <i>Psychiatr Serv</i> 47(11): 1251–3.	Ohio, USA	OCC N=20	PES visits, hospital admissions and duration of stay	Own Control Design; Pre-Post	Reduced PES visits, hospital admissions and duration of stay			NA	8	2
IV.C.5. Wagner et al <i>Psychology, Public Policy, and Law</i> 2003, 9(1/2), 145–158.	North Carolina, USA	OPC N=129; OPC Renewed after 90 days N=47 vs OPC Not-renewed N=82	Average number of monthly visits per subject by type.	Pre/Post for renewed vs NonRenewed OPC Exclusive of dangerous patients.. No post-period control for extension of OPC or not into follow-up.	The amount of outpatient services received was associated with crisis (Arrests and Hospital admissions). Regardless of OCC duration, psychiatrist (medication management) visits were emphasized treatment contacts. Medication non-compliance was the most significant predictor the amount of service use among the OCC patients.	< community services		NA	Not Rated	Not Rated

#### D. Early Intervention CTOs

Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-ordered
IV.D.1. Segal & Burgess 2006d <i>Psychiatr Serv</i> 57(11):1614–22.	Victoria, Australia	CTO: 8,879 vs. Non-CTO: 16,094	Admissions; admission length; Community service use	Adjusted Comparison Group Design, Propensity Score Adjustment (Regression), Matching and Regression	Early use of CTOs associated with reduced number of admissions, reduced admission length. No significant association with community service use		3	Not Rated	Not Rated
<b>E. Community Initiated CTOs</b>									
Study	Jurisdiction	Sample	Outcome Criteria	Design & Analysis features*	Summary of finding(s)	“No impact” expectation	Berkeley Evidence Rank (BER) <sup>†</sup>	Newcastle-Ottawa Score (NOS)	NOS re-ordered
IV.E.1. 1. Segal and Burgess 2008 <i>Aust N Z J Psychiatry</i> 42:732–739.	Victoria, Australia	CTO patients with only community initiated orders=415; CTO with only hospital initiated orders N=7,720; CTO patients with both types of orders=744	Admission length	Adjusted Comparison Group Design Propensity Score Adjustment (Regression), Matching and Regression	Community-initiated CTOs associated with reduced admission length vs. hospital-initiated CTOs		3	Not rated	Not Rated

\*\*\* Also published in: Swartz et al 2001 *Nerv Ment Dis* 189:583–592, and Swanson et al *British Journal of Psychiatry* 2000; 176: 224–231).

<sup>†</sup>See Figure 1 for determinants of hierarchical rank of study