International experiences of using community treatment orders

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Contributors
Rachel Churchill designed the review, supervised its conduct, performed reliability checks, identified additional papers, extracted data from primary sources, methodologically rated the studies and wrote the review. Gareth Owen wrote much of chapter 2 and was responsible for performing the searches and conducting the initial systematic review, identifying relevant papers, extracting information, quality assessing studies and summarising their findings. Matthew Hotopf and Swaran Singh contributed to the design of the review and commented on drafts.

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Executive Summary

Key points

- It is not possible to state whether community treatments orders (CTOs) are beneficial or harmful to patients.

- To date, this is the most comprehensive and thorough review of research into international experiences of using compulsory treatment orders, summarising evidence from 72 data-based empirical studies undertaken in six countries.

- A range of designs have been used to evaluate CTOs, but research in this area has been beset by conceptual, practical and methodological problems, and the general quality of the empirical evidence is poor.

- There was a lack of consistent evidence of benefit from CTOs from the nine comparative studies, including two RCTs, that evaluated the effects of CTOs across a range of outcomes.

- The perceptions of CTOs held by different stakeholders were reported in 18 studies and were very mixed, with both positive and negative views expressed.

- Fourteen cross-sectional studies indicated that the characteristics of CTO patients across different jurisdictions were remarkably similar.

- Overall, although some stakeholder views are positive, there is currently no robust evidence about either the positive or negative effects of CTOs on key outcomes, including hospital readmission, length of hospital stay, improved medication compliance, or patients' quality of life.

- These findings are consistent with the conclusions of other recent reviews on this topic.

Introduction

(1) In July 1998, the Government began a process of reform of mental health law for England and Wales with a view to replacing the current Mental Health Act (1983) with a new piece of legislation.

(2) Following extensive consultation, discussion and redrafting, in March 2006, the Government announced plans to amend the current 1983 Act, and that the proposed changes would include the introduction of Supervised Community Treatment (SCT) to allow patients to live in the community under the powers of the Mental Health Act.

(3) This report provides a synthesis of data-based research evidence from other countries where such legislation already exists.

Chapter 1: Compulsory community treatment in England and Wales

(4) Provisions for compulsory community treatment are extensive in both existing legislation and proposed amendments to the 1983 Act.

(5) The 2004 draft Mental Health Bill indicated that non-resident orders should be considered for *any* patient as a *least restrictive alternative* to hospitalization.

(6) The 2006 proposals indicate that SCT will be a more targeted approach, addressing the specific problem of 'revolving door' patients. SCT patients will have to meet criteria which are similar to those for admission for treatment under Section 3 of the 1983 Act. These powers will be targeted towards patients who, without continued treatment, would be a risk to their own health or safety or that of others.

(7) Compared with existing provisions and the proposals in the 2004 draft Mental Health Bill, the SCT proposals outlined in March 2006 seem to be measures intended to prevent deterioration, whilst still allowing treatment in the least restrictive environment under the powers of the Mental Health Act.

Chapter 2: Cross-national comparisons of CTO design

(8) There is a wide variety of CTO arrangements in place in different jurisdictions. Both *least restrictive* versus *preventative* features of CTO design can be identified and help to compare and interpret CTOs across jurisdictions.

(9) In the context of the US experience, *least restrictive* CTOs appear to be associated with specific conceptual problems and may be difficult to use in practice. *Preventative* CTOs avoid some of the conceptual difficulties, but may risk constitutional/human rights challenges.

(10) In the US, the development and use of preventative CTOs is becoming more widespread. In contrast, a whole group of CTO arrangements exist, mainly in Australasian jurisdictions, with both *least restrictive* and *preventative* features. Such arrangements are largely dependent on clinical discretion and avoid some of the design difficulties of *least restrictive* CTOs and some of the legal controversies surrounding *preventative* CTOs.

(11) The possible effects of the criteria and arrangements for the 'non-resident' orders described in the 2004 draft Mental Health Bill were probably best characterized as *least restrictive*. Although the March 2006 announcements suggest arrangements that are similar to those set out in the 2004 Mental Health Bill, it also indicates that Supervised Community Treatment might be used explicitly for the prevention of deterioration or relapse. SCT arrangements therefore appear to most closely resemble those jurisdictions where CTO arrangements have both *least restrictive* and *preventative* features.

Chapter 3: The systematic review

(12) The objective of this study was to undertake a systematic review of national and international research relating to the use of CTOs.

(13) For the purposes of this report, CTOs were defined as any legal framework for community mental health treatment which was authorized by a statute, located in the community with no *necessary* tie to hospitalization, and where the terms of the CTO were enforceable.

(14) Reports of data-based empirical studies on CTOs, undertaken in any country, published or unpublished, were included in the review. All types of study design (except case-reports) were eligible for inclusion. There were no restrictions on language, year, study-quality or study sample size. Studies where part of the data was collected prior to the actual introduction of a CTO were included.

(15) Comprehensive search strategies for all relevant databases were undertaken references were scanned. Where a study appeared to meet the inclusion criteria, or where a final decision could not be made, full copies of the articles were obtained and assessed. Additional articles were identified from the bibliographies of included studies, contact with experts and those working in the field, and through sources of grey literature.

(16) The aims and characteristics of each study were recorded. Studies were grouped according to their aims and were assessed on basic methodological quality issues.

(17) Initial searches and cleaning resulted in 767 articles. Following initial scanning of these, 192 full articles were obtained. Further examination resulted in the selection of 178 articles. Bibliography checks and contact with experts yielded another 66 articles, giving a final total of 244 references. Of these, 72 were subsequently found to be data-based empirical studies relating to the use of CTOs in a number of different jurisdictions.

(18) Forty-seven studies were conducted in the US, 10 in Australia, five in New Zealand, four in Canada, three in the UK, two in Israel and one was world-wide.

Chapter 4: Descriptive studies of existing CTOs

4.1 CTOs in practice

(19) Twenty-one one-off or repeated descriptive and analytic cross-sectional studies were identified which reported how CTOs in other jurisdictions have worked in practice.

(20) Studies which report the experiences of implementing CTOs reflect research interests over several decades and across a wide variety of jurisdictions, all with different legislative arrangements and differing levels of community-based services.

(21) The early evidence suggested that, for a variety of reasons, so-called *least restrictive* CTOs tended to be little used, and that they generated confusion and antipathy between the courts and the healthcare professionals charged with implementing them.

(22) Several studies indicated some sort of ‘bedding-in’ period during the early stages of CTO use, and it is notable that a large proportion of the CTOs studied were revised in the years following their introduction.

(23) Changes in CTO law do not translate simply into changes in practice, particularly where entrenched positions exist amongst those charged with carrying out CTO policy at the level of community mental health services.

(24) In the US in general, a disturbing lack of knowledge and considerable disagreement between different professional groups about local CTO arrangements was evident in the early years of CTOs use.

(25) Findings from naturalistic studies about the outcomes for patients on CTOs are likely to be unreliable. All studies had significant methodological limitations resulting in the need for cautious interpretation. Furthermore, these studies provide only descriptive data rather investigating potentially causal associations between the use of CTOs and specific outcomes.

(26) In general, naturalistic studies reported that hospital readmission rates, days spent in hospital, psychiatric emergency visits, and violent/harmful behaviour were all reduced, while outpatient attendance, participation in psychiatric services, medication compliance and a number of other outcomes were all reported to be improved following CTO assignment.

(27) There were multiple methodological problems with these studies, including potential selection, observation, information and response biases, as well as the effects of confounding. Many studies involved small sample sizes, and those which compared pre versus post CTO data, where patients effectively acted as their own controls, could not have controlled for the effects of 'regression to the mean'. None of these studies was able to control the environment in which the CTO was provided, thereby ignoring the potentially beneficial effects of other simultaneous service changes.

4.2 Stakeholder perceptions of CTOs

(26) Eighteen studies (four qualitative and 14 cross-sectional) examining stakeholder perceptions were identified.

(27) Studies addressing stakeholder perceptions are necessarily exploratory, often providing detailed descriptions of the views of relatively small groups of individuals that, whilst informative, might not be generalisable to the wider population. Selection, recall, observer and reporting biases were possible features of all these studies.

(28) Stakeholder perceptions will necessarily be influenced by the local context and CTO provisions and resourcing, and it might therefore be expected that these studies would yield quite different findings. However, there was surprising consistency in the wide range of views reported in different studies undertaken in different jurisdictions and involving different stakeholder groups. Whilst stakeholder perceptions of CTOs were still mixed, many were positive, and all stakeholder groups expressed both positive and negative views.

(29) There did appear to be differences between stakeholder groups on the value of different CTO outcomes, but avoiding involuntary hospitalization was a key priority for patients, family members, clinicians and the general public. In New Zealand, some

patients even expressed ambivalence about discharge from CTOs. In several studies, patients expressed positive views about some aspects CTOs, acknowledging that the CTO had improved their contact with services and helped them with their medication.

(30) Except for a highly selected group of patients with long–term experience of CTOs, any improvements in clinical outcomes and patient care experienced by patients tended not to be attributed to the CTO. Patient perceptions about the value of CTOs did not appear to be predicted by the outcome of the intervention.

(31) There was some evidence that perceptions of the fairness and effectiveness of CTOs were influenced by patients' views about their illness and need for treatment.

(32) Family members in the US and New Zealand were generally in favour of CTOs, although expressed concerns about the adequacy of support in the community and information provided to family members. It was also felt they might only be helpful for a relatively small proportion of patients, limiting their useful application.

(33) While psychiatrists appeared to hold many positive views about CTOs, with most surveys indicating that the majority of psychiatrists favoured CTOs, a number of concerns were also expressed, including concerns about the infringement of patients' rights and a lack of demonstrated efficacy.

(34) Although potentially biased, it is perhaps noteworthy that factors reportedly determining CTO use by psychiatrists tended not to relate to risk of violence, but rather to need for treatment and patient welfare. This finding was consistent across studies from different jurisdictions and amongst both psychiatrists and other mental health professionals.

4.3 Characteristics of patients on CTOs

(35) Fourteen descriptive and analytic cross-sectional studies reporting CTO patient characteristics were identified.

(36) There is remarkable consistency in the characteristics of patients on CTOs across jurisdictions embedded in very different cultural and geographical settings.

(37) The descriptive data indicate that patients are typically males, around 40 years of age, with a long history of schizophrenia-like or serious affective illness, previous admissions, poor medication compliance, aftercare needs, the potential for violence and displaying psychotic symptoms, especially delusions, at the time of the CTO.

(38) Limitations of the available evidence base prevent any reliable conclusions from being drawn about whether specific groups of patients are more likely to be subject to CTOs.

Chapter 5: Experimental and exploratory studies of CTOs

5.1 Introduction

(39) Causal associations between interventions and outcomes should only be inferred from experimental studies, where two groups are compared and it can be assumed that both groups might otherwise have had identical outcomes.

5.2 Randomised controlled studies of CTO outcomes

(40) Since CTOs are interventions involving a complex array of legal and medical arrangements, RCTs of CTOs are beset by practical, legal and clinical complexities that make them extremely difficult to conduct. Accordingly, only two studies, one in North Carolina and one in New York, have employed randomisation procedures to allocate patients to CTOs. Both studies evaluated preventative CTOs. Both studies encountered methodological problems with RCT design and CTO implementation. Aside from the ethical and practical problems already demonstrated by previous CTO outcome studies, the appropriateness of RCT designs for evaluating a policy intervention of this sort has been questioned.

(41) However, neither RCT found statistically significant differences between the CTO and Control groups in terms of health service outcomes including, hospital admissions, length of stay, contact with services, service intensity, and compliance with treatment.

(42) Neither RCT found statistically significant differences between the CTO and Control groups in terms of patient level outcomes including, social functioning, offences resulting in arrest, homelessness, general mental state, psychopathology, quality of life, carer satisfaction, or perceived coercion.

(43) Although collected as part of one or other of the trials, no specific data were reported relating to other outcomes including employment, self-esteem, other adverse effects, needs for care, or patient satisfaction.

(44) Despite obtaining data on approximately 20 different outcome variables between them, with the exception of one secondary outcome, neither trial reports any statistically significant differences between the CTO and the Control groups.

(45) Findings from a Cochrane review suggested that, even when data from both trials are pooled to improve study power, CTOs were not an effective alternative to standard care.

(46) Although none of the main outcomes were statistically significantly different, taking the estimated differences between the CTO and Control groups and using the proportion of people with the main outcomes, the Cochrane review estimated that 85 people would need to receive a CTO in order to avoid one admission, 238 people would need to receive a CTO in order to avoid one arrest, and 27 people would need to receive a CTO to prevent one episode of homelessness.

(47) Based only on data from the North Carolina study demonstrating that CTO recipients were significantly less likely to have been victims of violent or non-violent

crime, 6 people would need to receive a CTO in order to prevent one victimization incident.

5.3 Non-randomised comparative studies of CTO outcomes

(48) Given the difficulties of conducting RCTs of this type of intervention, outcome research in this area has tended to be dominated by non-randomised comparative studies, including cohort and controlled before and after studies. These epidemiological designs can involve larger numbers of more representative patients, incorporate lengthier follow up periods, and improve the generalisability and external validity of findings, but they are also prone to a variety of methodological and interpretation problems, particularly those resulting from bias and confounding.

(49) Eleven reports (5 cohort and 6 controlled before and after) of seven studies of non-randomised comparative studies were identified which evaluated the effects of CTOs on different outcomes.

(50) None of the eight studies evaluating readmission found any evidence to suggest that CTOs keep patients out of hospital.

(51) None of the five studies from jurisdictions in both the US and Australia found any differences between CTO and comparison groups in length of stay.

(52) One study suggested that CTO patients were more likely to remain in contact with services in the short-term and evidence from three studies suggested that CTO patients were more likely to use services and to use more services than other patients.

(53) Evidence from only one study indicated a possible improved compliance with treatment, but the findings from this study were inconsistent.

(54) Where patient level outcomes were reported, these indicated no effect of CTO on social functioning, violence, disturbed behaviour, or arrest. Contradictory evidence from only one study prevented any conclusion about the effects of CTOs on employment.

(55) There was some evidence that CTO patients might be more likely to be living at home or with family at 6 months than those involuntarily hospitalized or released.

(56) Evidence from one study suggested possible symptom improvement in CTO patients compared with those released without a CTO.

5.4 Exploratory analyses – variables potentially associated with outcome

(57) Fourteen reports described the findings of exploratory, potentially hypothesis-generating analyses of data from these studies, all investigating potential associations between a range of variables and CTO outcomes; two of these used patients from the New York RCT, while the remaining eleven re-analysed data collected as part of the North Carolina RCT.

(58) These analyses cannot be used to infer any causal association between explanatory variables and CTO outcomes, particularly since the original trials

themselves did not find any differences in outcome between the CTO and Control groups.

(59) Factors that may be important predictors of outcome include diagnosis and clinical characteristics, substance abuse status, duration of CTO, service intensity and medication adherence.

(60) These exploratory analyses are, at best, hypothesis-generating, resulting in findings that might be used to inform the design of future controlled research into the effects of CTO.

Chapter 6: Discussion

6.1 The findings of this review

(61) This review has found very little evidence of positive effects of CTOs in the areas where they might have been anticipated. None of the nine experimental studies found evidence suggesting that CTOs reduce either hospital readmission or length of stay, or that they improve compliance. A small number of non-randomised studies suggested possible improvements in contact with services and service intensity, although these might reflect pre-existing differences between groups and the increased efforts of service providers as much as favourable outcomes for patients. Only patchy evidence exists on the direct effects of CTOs on patients.

(62) Other positive findings have been widely reported in the literature. For example, less rigorously conducted and opportunistic naturalistic studies have often indicated positive outcomes for CTO patients. However, these studies have significant methodological problems limiting their use.

(63) Although the quality of the evidence in this field limits the strength of any conclusions about the effects of CTOs, it should be noted that there are few discrepancies among the findings of the nine experimental studies on the main health service outcomes of readmission, length of stay and treatment compliance.

(64) Despite the differences in CTO arrangements between jurisdictions, there was remarkable consistency in the characteristics of patients on CTOs and in the wide range of views, both positive and negative, reported by different stakeholder groups.

(65) A wide variety of CTO arrangements are in place in different jurisdictions. Research in this field frequently reflects the specific nature of the CTO in question and its stage of development and implementation.

(66) To date, this is the most comprehensive review of CTOs that has been undertaken. Several other overviews on this topic have been published over the last 5 years and those that have used a more systematic approach have been equally circumspect, noting that the research findings were equivocal and failed to provide strong evidence that CTOs were of benefit to patients.

6.2 Generalisability of the evidence-base

(67) The relevance of this research to the UK context is difficult to gauge given what is currently understood about how the proposals for Supervised Community Treatment will work (Mental Health Bill, 2006).

(68) Assessing the generalisability of this research is further complicated because these studies were conducted over a lengthy time period and evaluated a wide variety of arrangements, often early in the life of the CTO, with study reports usually providing poor descriptions of patients and interventions.

(69) The wide spectrum of stakeholder views in different jurisdictions is mirrored by the diversity of perspectives and views submitted to the House of Lords House of Commons Joint Committee on the Draft Mental Health Bill (2005) and vocalized by professional organizations, leading journals and advocacy groups in England and Wales.

(70) Despite the differences between jurisdictions, the demographic and diagnostic characteristics of patients placed on CTOs were remarkably similar, suggesting they might be a reasonable indication of the picture in England and Wales, should CTOs be introduced.

6.3 Gaps in the CTO evidence-base

(71) On the basis of much of the evidence reviewed here, there is certainly a case for additional research in this area. Furthermore, many authors have highlighted the need for formal monitoring and outcome evaluation alongside the introduction of new or amended CTO policies in any jurisdiction.

(72) Given the coercive nature of CTOs, there is a need to consider whether any potential therapeutic gains might be better delivered by enhancing the quality and assertiveness of community treatment for high risk patients through, for example, assertive community treatment (ACT).

(73) The current emphasis on health service outcomes such as readmission, length of stay, contact with services and compliance with treatment is not, on its own, sufficient. Outcomes relevant to patients and their families such as mental state, symptom levels, social functioning, quality of life, satisfaction, perceived coercion, therapeutic relationship should be prioritized in future research. Evidence about the effects of CTOs in the longer term, particularly relating to the circumstances of renewal and post CTO care and engagement, is also lacking.

(74) The effects of CTOs on the perceptions, behaviour and experiences of voluntary patients in the community demands urgent evaluation, and economic data about the resources necessary to underpin two systems of care are required.

(75) There is little specific consideration in the CTO literature of why individuals needing community-based mental health treatment fail to obtain or receive it, and how applying a court order actually addresses this. A better understanding of these factors would help to determine not only how best to facilitate treatment compliance during

the CTO, but also following its expiry, and might even obviate the need for a court order all together.

(76) Lack of resources is almost universally acknowledged by mental health professionals as a reason for failing to use a CTO, or its failure to work. There are genuine concerns that CTOs might be used as an alternative to providing a comprehensive package of effective community mental health services. Our findings indicate that resource implications to support the introduction, implementation and appropriate use of CTOs in England and Wales, as well as the resource implications for existing services available to voluntary patients, will need to be addressed.

(77) Even where there is limited evidence of positive outcomes associated with CTOs, the mechanisms by which CTOs impact on these outcomes have yet to be elucidated, and the question remains as to whether similar outcomes might be achieved without a court order.

(78) Whilst we have no firm evidence that, in general, CTOs result in any beneficial health service or patient level outcomes, there is some evidence that CTOs may have beneficial effects under certain circumstances and with certain groups of patients. Intensive mental health treatment and enhanced monitoring for a sustained period of time may be associated with reduced recidivism and improved outcomes, and CTOs might have role in improving services to achieve these outcomes. However, it is not clear from the available evidence whether CTOs are necessary to improve services, or whether they play any role in improving outcomes.

(79) There is a need for evidence about whether CTOs are helpful in promoting engagement with services for patients with and without capacity to make treatment decisions.

Introduction

1. Background

In July 1998, the Government began a process of reform of mental health law for England and Wales with a view to replacing the current Mental Health Act (1983) with a new piece of legislation. The Richardson Committee, an independent expert committee set up to review mental health law and consider what changes were needed, presented its report *Review of the Mental Health Act: Report of the Expert Committee* in July 1999. In the same year, the Government's proposals for a new Mental Health Act were published in a Green Paper, *Reform of the Mental Health Act 1983, Proposals for Consultation.* In July 2000, the *NHS Plan* set out the Government's plans for mental health services, and in December of that same year, the Government published a White Paper, *Reforming the Mental Health Act.* In June 2002, the Government published a draft Mental Health Bill for consultation, accompanied by a consultation document seeking views about a number of policy areas. The Government subsequently redrafted the Bill, which was then published in 2004. The provisions in this Bill included new proposals for compulsory treatment in the community. Following extensive consultation, discussion and redrafting, in March 2006, the Government announced that the draft Mental Health Bill was to be replaced by a shorter, streamlined Bill that instead, amended the current 1983 Act. The Department of Health briefing sheets on the proposed changes indicated that the new Bill to amend the 1983 Act would introduce Supervised Community Treatment (SCT) to allow patients to live in the community under the powers of the Mental Health Act. The full proposals set out in the November 2006 Mental Health Bill were published following the first submission of this report to the Department of Health. This report provides a synthesis of data-based research evidence from other countries where such legislation already exists.

2. Concepts and controversies surrounding community treatment orders

Community treatment orders (CTOs) are a form of compulsory community treatment law that began to appear in North American and Australasian jurisdictions during the 1980s. They provide a legal framework within which patients with a serious mental disorder may be required to accept psychiatric treatment while living outside hospital. McCafferty and Dooley provided a definition of a CTO as:

> *"A legal mechanism by which people with mental health problems who need treatment are compelled to submit to treatment on an outpatient basis".*
>
> (McCafferty and Dooley, 1990)

CTOs were originally conceptualized as *one* way of addressing problems thought to have occurred as a result of a policy of deinstitutionalization – the homeless mentally ill, jails populated by those with chronic mental illness, the revolving door syndrome and the dangerous mentally ill in the community (Geller, 2000). A CTO could be advanced to manage mentally ill patients who failed to adapt to community life following widespread closure of asylums. Initially, CTOs attracted interest from civil libertarians as a provision for treatment allowing a less restrictive alternative to

hospitalization (Hiday, 2003). From this perspective, any provision that enhanced the liberty of a mentally ill person without harming others, was ethically desirable. Hiday reports how, for this reason, early empirical studies of CTO 'effectiveness' in the USA addressed the question of whether patients could be successfully maintained on a CTO without harm to self or others, rather than whether they afforded superior health outcomes to hospitalization.

Since these early conceptualizations however, the CTO has evolved into a legal intervention with purported health benefits. Like any medical intervention, in order to be adopted as a form of best practice, CTOs should demonstrate effectiveness in terms of improved health outcomes compared with the available alternatives. Hiday (2003) reported on the factors leading to this transition towards emphasis on health benefits. Central among them was the move towards use of CTOs as treatment interventions, and the gradual targeting of those patients with 'need for treatment profiles' rather than 'imminent dangerousness profiles'. As a result, more recent US empirical studies into CTO 'effectiveness' have addressed the question of whether CTOs bring about superior health outcomes compared to voluntary treatment, thereby justifying their inherent coerciveness.

More recently, Swartz and Swanson (2004), two leading contemporary US researchers on CTOs, have provided a more comprehensive definition of a CTO as:

> "A legal intervention designed to benefit persons with serious mental illness who need ongoing psychiatric care and support to prevent relapse, hospital readmission, homelessness, or incarceration but have difficulty following through with community-based treatment".

This shift in emphasis and rationale has resulted in a switch in the civil libertarian position away from the support of the CTO. Instead, CTOs are criticized for unjustifiably and unnecessarily extending the net of social control (Fulop, 1995). Both the concept and practice of CTOs have attracted considerable ethical controversy (O'Reilly, 2004). In order to try and interpret the arguments presented by both sides, it is important to acknowledge two points.

The first is that the ethical controversy is, to a large extent, separable from the question of whether or not CTOs effect certain measurable health outcomes (that is, the 'evidence base'). Some commentators favour the use of CTOs, some do not; both cases are argued on ethical grounds and use evidence of effectiveness to support their views. The meaning of decreased hospital readmission rates, for example, could be regarded as a positive or a negative outcome, depending on ones underlying ethical position. The US legal aid lawyer, Edward Mattison (who opposes CTOs), illustrates this point when he writes

> "I am surprised that the observed effect of CTO is so marginal in programs that are ideologically committed to it. But even if some would benefit, the question that has to be asked before we pass a law is whether the potential benefits outweigh the costs that we can foresee". *(Mattison, 2000).*

Thus, even evidence of a positive treatment effect may not provide sufficient justification for CTO use without the availability of additional information about potential negative consequences, enabling an appraisal of the benefits and harms associated with CTO use. On the other hand, if CTOs are deemed ethically desirable as a 'least restrictive alternative' or on the grounds of 'need for treatment', then evidence demonstrating even marginal 'beneficial' effects or minimal adverse consequences might provide justification for the position. This is illustrated in the approach taken to studying the effects of CTOs as a least restrictive alternative in the years following their introduction in the USA. CTOs were viewed as being better than hospitalization because they seemed to result in minimal adverse consequences (Hiday, 2003). More recently, even small reported treatment effects have been interpreted as having very positive connotations by groups who advocate need for treatment in severe mental illness.
(http://www.psychlaws.org/default.htm).

The second point to note is that different ethical positions have been advanced to support opposing views on CTOs. Philosophically articulate arguments exist in the literature, both in favour of CTOs (e.g. Kress, 2000) and against CTOs (e.g. Fulop, 1995), and these are widely influential. In the US, where this debate is perhaps most visible, two active pressure groups, the *Treatment Advocacy Centre* and the *Bazelon Centre for Mental Health Law*, campaign for and against CTOs respectively, the first from a 'need for treatment' perspective, and the second from the civil libertarian perspective (Torrey, 2001; Allen and Smith, 2001). Similar ethical fault lines exist in other jurisdictions where CTOs exist or where their introduction is being discussed - England and Wales is but one example (Moncrieff, 1999).

3. Defining community treatment orders

It is not controversial that in practice, in community psychiatry, coercion and treatment pressure already exists, whether or not CTOs are a recognized part of the legislation of a jurisdiction. Many commentators have argued that treatment pressure exists on a continuum in community psychiatry, from simple persuasion and leverage by a close keyworker or doctor, through treatment compliance as a precondition to social welfare benefits, to the threat of forceful transportation to a mental health hospital for legally sanctioned treatment. For example, Monahan and others also argue that coercion operates on a continuum throughout community care for people with severe mental disorders, and that it has always been the defining issue in mental health law (Monahan et al, 2003).

What then are the boundaries between coerced community treatment in general and CTOs in particular? Geller (2000) identifies five basic alternative legal positions around compulsory community treatment:

1) A state may make no provision for compulsory community treatment.
2) A state may practice compulsory community treatment through its courts without statutory authority.
3) A state may allow for hospital or community compulsory treatment, but have no provisions for enforcement of compulsory community treatment.

4) A state may allow for hospital or community compulsory treatment under the same criteria with specific mechanisms for enforcement and/or revocation.
5) A state may allow for community compulsory treatment under a lesser standard than that required for hospital compulsory treatment.

The various definitions of CTOs that we have identified are in line with positions 4 and 5 above. These are treatment orders which enforce compulsory treatment *outside (and independently) of the hospital,* contain specific mechanisms for *enforcement and/or revocation* and are authorized by *statute*.

This systematic review discusses only the CTOs in other countries that meet these criteria and that are therefore most closely aligned to the proposals in the 2004 Mental Health Bill for England and Wales and the amendments to the current Mental Health Act (1983) outlined in the 2006 Department of Health briefing sheets and Mental Health Bill. Thus, the current provisions for compulsory community treatment in England and Wales that do not meet these criteria (aftercare under supervision and guardianship as well as conditional leave from hospital) are not included here. A discussion of the research relating to these provisions under current mental health legislation is presented in the main systematic review of research into the Mental Health Act (1983) which will accompany this report.

4. Aims of this report

In this report we have systematically reviewed the international empirical literature on existing CTOs. Studies identified have been of varying quality, have employed a variety of methodological designs, and have addressed a range of study questions. We have assessed the methodological quality of these studies to help the reader to decide which studies might be most useful in guiding further thinking about CTOs (see Appendix I for the quality assessments used for each type of study design).

The CTO literature is complex. Studies come from multiple jurisdictions in several different countries, each with its own legal provisions and psychiatric services. There are even within-country differences between CTOs, with provisions varying across states and provinces. Although all the CTOs we have identified share the characteristics outlined above, the terminology used to describe them is also varied. For example, in some jurisdictions, CTOs might be known as ‘mandatory outpatient treatment’ or ‘assisted outpatient treatment’, while different types of CTO, such as ‘least restrictive’ and ‘preventative’ might still be referred to under the general CTO rubric (see Appendix II for the full range of terms in use). For consistency, we use the term ‘CTO’ throughout this report to refer to all types of treatment order meeting the definition outlined above.

To set the CTO literature in context, we begin in Chapter 1 by describing both the current proposals for compulsory community treatment in England and Wales as outlined in the 2006 Department of Health briefing sheets describing the planned amendments to the Mental Health Act (1983), as well as the original 2004 Mental Health Bill for England and Wales. In Chapter 2 we have explored issues around the design of CTOs, summarized existing arrangements for different types of CTOs across different jurisdictions, and attempted to highlight key characteristics of the

CTO outlined in the current proposals for England and Wales. Chapter 3 briefly describes the systematic review process and provides an overview of the studies identified. In Chapters 4 and 5 we summarise the data-based empirical research literature around the use of CTOs. Chapter 4 deals with studies of the experience of implementing CTOs, stakeholder perceptions of CTOs, the characteristics of patients on CTOs, and the outcomes for CTO patients followed over time. The methodologies used in these studies mean that they cannot provide evidence of causal associations, but they are of interest from a descriptive perspective. Chapter 5 summarises the findings from experimental studies, both randomized and non-randomised, of CTO effectiveness. Chapter 6 draws together the findings of all research in this area, discusses the general methodological problems with these studies, and considers the broader ethical and practical issues associated with CTOs in view of the current proposals in the draft Bill.

Chapter 1

Compulsory community treatment in England and Wales

1.1 Existing arrangements for compulsory treatment in the community

Three forms of compulsory treatment in the community exist under current mental health legislation. Provisions under the Mental Health Act (1983) include 'conditional leave from hospital' (section 17) and a limited form of statutory 'guardianship' in the community (section 7 and section 37). Section 25A-I of the Mental Health (Patients in the Community) Act (1995) allows for 'supervised discharge' of patients into the community. As described below, these powers are different from the proposals in the new draft Mental Health Bill to amend the 1983 Act. For the purposes of comparison with the proposals in the new draft Bill, we outline below the current provisions in the 1983 and 1995 Acts. A systematic review of research literature for these existing arrangements is provided in an accompanying report on the Mental Health Act (1983).

Conditional leave from hospital (MHA, 1983; Section 17)

Under the 1983 Act, patients 'liable to be detained' may be granted 'leave' from hospital, with certain 'conditions' – so called 'section 17 leave'. They may also be 'recalled' from leave to hospital under sections 17(4) and 18. There are procedures for enforcement of these provisions and, in the event of failure to return to hospital, the police can provide assistance. Technically however, while on leave, patients remain inpatients detained under the Act.

In the early 1980s, clinicians were apparently using these powers as a de facto CTO, keeping patients on leave for long periods (Dawson, 2005). Patients could be recalled to hospital shortly before the expiry of each period of leave for a brief assessment and their leave period extended while the patient was formally 'detained'. This practice was successfully challenged in the *Hallstrom* case (1986), resulting in the following judgement:

- An involuntary patient's 'liability to detention' under the Act, which was a precondition of their being granted leave, could not be extended if the patient was on leave at the time.
- Nor could the patient's leave be revoked unless there were good clinical reasons for the treatment in hospital at the time.
- The patient could not be lawfully recalled to hospital solely to create the conditions for their leave to be extended.
- Conditional leave must be set at 6 months maximum.

The Mental Health (Patients in the Community) Act 1995 made it lawful that conditional leave could be granted for up to one year before renewal was required and in 1998, the English Court of Appeal partially overruled the *Hallstrom* decision. The case, *Barker*, concerned a patient with a periodic drug-induced psychosis. Treatment included periods in hospital involving urine testing for drug abuse. Lord Woolf

judged that conditional leave from hospital could be extended, even if the patient was not in hospital at the time. The combination of inpatient and outpatient compulsory care was emphasized.

Guardianship orders (MHA, 1983)

The 1983 Act makes provisions for patients to be placed under a limited form of statutory guardianship in the community. It provides 'an authoritative framework for working with a patient, with a minimum of constraint, to achieve as independent a life as possible within the community' (DH, 1999). Criteria for guardianship according to the 1983 Act are:

- The patient suffers from a mental disorder (as defined by the Act) and the disorder is of a nature or degree which warrants reception into guardianship
- Guardianship is necessary in the interests of the welfare of the patient or for the protection of other persons.

Application for a guardianship must be accompanied by a care plan and follow interdisciplinary discussions. The appointed guardian is expected to 'advocate' on behalf of the patient in relation to relevant agencies. The three powers of the guardian are to require the patient to live at a specified place, to require the patient to attend at specified places for treatment and to have access to the patient. None of these powers can be enforced, and the Code of Practice is clear that 'If the patient consistently resists the exercise of the guardian's powers it can be concluded that guardianship is not the most appropriate form of care for that person and the guardianship order should be discharged' (DH, 1999).

The concept of guardianship thus seems to apply to patients in the community for whom a legal framework is appropriate but who are not significantly resisting or refusing the care plan. The criteria are different from those used in the 1983 Act for admission to hospital – the notable difference is the use of the term 'welfare of the patient'.

Supervised discharge orders (MH (Patients in the Community) Act, 1995)

Supervised discharge orders were introduced by the Mental Health (Patients in the Community) Act (1995). These orders enable compulsory community treatment even if the patient is no longer 'liable to be detained' under the 1983 Act. The orders may be used to ensure aftercare is provided for patients who:

- Have been detained for treatment
- Need suitable aftercare in respect of their mental disorder to prevent substantial risk of serious harm to themselves or other people, or of serious exploitation.

The Code of Practice indicates that the order is primarily intended for patients with severe mental illness. The patient must also have a responsible medical officer in the community and a suitably experienced and qualified member of the community mental health team (a key worker) (DH, 1999).

Setting up the supervision order requires the mental health trust to meet with the local authority and agree the aftercare arrangements (DH, 1999). In the event of treatment non-compliance, powers exist to 'take and convey' patients to clinics to *offer* them treatment, but no explicit obligation is imposed on the patient to accept outpatient treatment, and police duties are unclear. If hospitalization is decided upon, the usual procedures under the 1983 Act must be followed.

The concept of supervised discharge orders thus seems intended for the post-hospital management of patients with severe mental illness with a view to prevent risk of harm to self or others. However, in terms of enforceability it is arguably no different from guardianship.

1.2 Current proposals for amending the Mental Health Act (1983)

The original reform process was initiated by the Government in 1998, with a call for the most wide-ranging reform of mental health legislation since the 1950s. In 2004, the Government published proposals to reform mental health legislation for England and Wales in the form of a draft Mental Health Bill. The proposed reform of the legislative framework was wide-ranging and included changes to: the definition of mental disorder, the criteria for involuntary treatment, the processing of formal patients, the roles of responsible medical officers and approved social workers, the tribunal system, formal powers in the community, the nominated person, advocacy, care planning, criteria for ECT, patients in criminal proceedings, police powers, children and young people and the healthcare commission. Following extensive consultation, discussion and redrafting, in March 2006, the Government announced that the Mental Health Bill was to be replaced by a shorter, streamlined Bill that instead, amended the 1983 Act. Key policy areas where amendments to the Act are proposed include: the introduction of Supervised Community Treatment (SCT), a simplification of the definition of mental disorder, changes to the criteria for detention, improvements to Mental Health Review Tribunal processes, changes to professional roles, and the introduction of a mechanism for some patients to appoint a different 'nearest relative' to represent them.

This report is concerned with the proposed changes to formal powers in the community. At the time of writing, the Bill itself was being redrafted before being passed through Parliament and the Code of Practice was not yet available, so the specific details about how these changes were likely to be implemented were not yet clear. We therefore interpreted the proposed changes using the Department of Health published briefing sheets (providing summaries of key aspects of the 2006 Bill prior to its full publication, including: Definition-A1, April 2006; Criteria-A2, April 2006; Supervised Community Treatment-A3, April 2006; Professional roles-A4, April 2006; Implementation-A8, June 2006), taking account of the original draft Mental Health Bill (2004) Explanatory Notes, the Department of Health document 'Improving mental health law' (DH, 2004), the Joint Parliamentary Committee Report, and the Government's response. We also drew on the legal analysis by the New Zealand legal academic John Dawson (Dawson, 2005).

The draft Mental Health Bill for England and Wales (2004)

The 2004 draft Bill used the term 'non-resident orders' to refer to community treatment orders and the term 'resident orders' to refer to hospital treatment orders. Both would be ordered following agreement by two independent clinicians and one approved mental health professional (who took the place of the Approved Social Worker in the 1983 Act). The compulsory order, together with the care plan, would then be reviewed by a Tribunal no more than 28 days later. The Tribunal would have been advised by an expert panel that was independent from the clinical supervisor responsible for the care plan (the clinical supervisor replaced the 'Responsible Medical Officer' in the 1983 Act). The Tribunal had decision-making power over both the involuntary treatment order and the care plan.

The criteria for non-resident orders and resident orders were identical:

1. The patient suffers from a 'mental disorder'.
2. This is of such a nature or degree that its medical treatment is necessary.
3. Appropriate treatment would be available.
4. The treatment is necessary to protect the patient from suicide or serious self-harm, or from serious neglect of their health or safety, or is necessary to protect others.
5. There is no other lawful way to provide the treatment.

The examining clinicians had to decide if the criteria applied to a patient and then whether involuntary treatment should be non-resident or resident. Treatment in the least restrictive setting appropriate was expected. The clinical supervisor had a duty to keep the resident/non-resident status of the patient under review so that patients could move between the community and hospital as appropriate.

Under these provisions, a proportion of patients currently managed informally in the community were also expected to be transferred directly onto non-resident orders without prior hospitalization. Although targeted use of CTO was not formally stipulated by the Bill, it was thought likely that these patients would be those regarded as 'revolving door' patients, as identified by a Department of Health working party (DH, 1993). Such patients were characterized by the working party as having a history of:

- Formal admission to hospital for mental illness
- Improvement with treatment
- Discharge to the community with a care plan
- Failure to comply with the care plan and consequent deterioration in mental health
- Formal readmission to hospital

Non-resident orders could specify a patient's place of residence. Non-compliance with this condition could enable health professionals or the police to return a patient to the residence or take the patient to a clinic or hospital. Patients might have been required to attend for treatment at a specified place that is not a hospital (e.g. clinic), but could then be taken into custody and conveyed to the relevant hospital or place by the responsible clinician. Treatment without consent could only occur in a hospital. Police powers to enter private property without a warrant were expected, but as 'a last resort measure' "for purpose of saving life or limb" (DH, 2004).

Non-resident orders could last up to 6 months in the first instance. If three treatment orders had been given, or where the total period a patient had been under a treatment order was 12 months, a further order of up to 12 months could then be given. Patients could be discharged from the non-resident orders at any time by their clinical supervisors or Tribunals if the criteria for involuntary treatment were thought to no longer apply.

The Bill stated that 'appropriate treatment must be available' before a non-residential order could be made. Beyond this, no reciprocity arrangements were specified. The Department of Health stated that it regarded the Mental Health National Service Framework rather than new mental health legislation as the right way to improve access to services (DH, 2004).

Amendments to the 1983 Act announced in March and published in November 2006
At the time of writing, less information was available about the specific arrangements under the new Bill to amend the 1983 Act. These proposals introduced the term 'Supervised Community Treatment' or SCT. Following a period of detention in hospital, SCT is intended to enable patients who do not need to be detained in hospital to live in the community under the powers of the Mental Health Act (1983). This amendment to the Act is intended to ensure that patients with a chronic mental disorder that has stabilized following treatment in hospital, so-called 'revolving door' patients, continue with required medical treatment with minimal disruption to their lives, in order to prevent deterioration after leaving hospital. Any patient going on to an SCT will have been assessed and treated in hospital first, and must be under Section 3 or detained under a Part III power without restrictions.

Decisions about SCT will be based on the clinical supervisor's judgement of the person's condition and circumstances. The clinical supervisor, who replaces the responsible medical officer (RMO), will decide if, and when, an SCT is appropriate. They must obtain a second opinion from an Approved Mental Health Professional (AMHP) whose training, roles and responsibilities will be similar to that of the current ASW. Both clinical supervisors and AMHPs will have appropriate training and competencies, and may now come from one of a range of mental health professions.

The criteria to be applied are similar to those for admission for treatment under Section 3 of the Act. Only if a patient would be at risk to their own health or safety, or that of others if they did not continue their treatment when discharged from hospital, can they be considered for SCT. An appropriate package of treatment and free support services will be put into place by the NHS and local authority social services before a patient leaves hospital on SCT. There may also be requirements on SCT patients to ensure they stay in contact with mental health services.

Practitioners will monitor for signs of deterioration and the circumstances in which patients can be recalled to hospital will be clearly stipulated. The clinical supervisor must obtain a second opinion from an AMHP to redetain the patient, and hospital managers must refer the patient's case to the tribunal if the patient is detained again for more than 72 hours. SCT renewal is via report to the Hospital managers, with the same timeframe as for detention under Section 3, that is, after six months from the time the patient leaves hospital, at one year, and then at yearly intervals. The DH will work with the Care Services Improvement Partnership (CSIP) and other agencies to

implement any changes. CSIP works alongside mental health and other services and services users to help improve and develop services.

1.3 Summary

Provisions for compulsory community treatment are extensive in both existing legislation and proposed amendments to the 1983 Act. The 2004 draft Mental Health Bill indicated that non-resident orders should be considered for *any* patient as a *least restrictive alternative* to hospitalization. On the other hand, the 2006 proposals indicated that SCT will be a more targeted approach, addressing the specific problem of 'revolving door' patients. Neither the current Mental Health Act (1983) nor either of the draft Mental Health Bill proposals permit forced administration of medication outside hospital. However, both conditional leave under the 1983 Act and the proposals in the 2004 draft Mental Health Bill allow for forcible transport of a patient to hospital, where forced administration of medication can take place. The 2006 proposals also appear to allow for a patient to be recalled to hospital, but do not provide details. Like the initially proposed non-resident orders, conditional leave provisions apply the same criteria for eligibility as those used for inpatient treatment, and are enforceable. Unlike the proposals for non-resident orders, guardianship orders and supervised discharge orders apply different criteria from those required for hospitalization, and are not enforceable. However, supervised discharge orders focus on patients who have been detained in hospital and who, without aftercare in the community, are deemed liable to be at substantial risk of serious harm to themselves or other people, or of serious exploitation. The emphasis is thus on *prevention* of risk. Similarly, the 2006 proposals indicate that SCT patients will have to meet criteria which are similar to those for admission for treatment under Section 3 of the 1983 Act, and focuses on patients who, without continued treatment, would be a risk to their own health or safety or that of others. Unlike supervised discharge orders, SCTs will be enforceable. Thus, compared with existing provisions and the proposals in the 2004 draft Mental Health Bill, the SCT proposals outlined in March and published in November 2006 seem to be measures intended to prevent deterioration, whilst still allowing treatment in the least restrictive environment under the powers of the Mental Health Act.

Chapter 2

Cross-national comparisons of Community Treatment Order design

2.1 Introduction

Until this year, with the exception of Israel, Community Treatment Orders were a North American and Australasian phenomena. The first European CTO came into effect in Scotland in October 2005. Community Treatment Orders (CTOs) exist in 52 separate jurisdictions across the world. The geographical breakdown is as follows:

- 41 states in the USA (Swartz et al, 2004)
- The provinces of Ontario and Saskatchewan in Canada (O'Brien and Farrell, 2005)
- All states in Australia (Brophy and McDermott, 2004)
- New Zealand (Dawson, 2005)
- Israel (Ajzenstadt et al, 2001)
- Scotland from October 2005 (http://www.scotland.gov.uk)

2.2 Basic issues of CTO design

Several authors have identified fundamental conceptual issues in the design of CTOs (Winick, 2003; Slobagin, 1994; Kress 2000; Hiday, 2003; Dawson, 2005; Appelbaum, 2001). CTO arrangements can differ on a variety of important criteria, including whether the CTO is clinician or court-ordered, the powers available to treat outside the hospital setting, and the ability to revoke the order and return the patient to hospital. These arrangements often reflect the legal, societal and service contexts in which the legislation is being enacted and implemented. Although many factors distinguish different CTOs, it is possible to identify three general conceptual dimensions underpinning CTO design. They may be summarized as follows:

(1) Whether the criteria for CTOs are the same as the criteria for hospital treatment orders or not;
(2) Whether it is the objective of the CTO to *treat deterioration* that has already occurred or to *prevent deterioration* from occurring;
(3) Whether the CTO aims to offer patient choice by providing the option of community treatment as a least restrictive alternative to hospital for any patient or whether the CTO aims to be a component of involuntary psychiatric management for a specific group of patients (e.g. so called 'revolving door patients') which is to be used according to clinical and legal criteria and not, primarily, as a least restrictive alternative.

2.3 The distinction between 'least restrictive' vs. 'preventative' CTOs

How do different jurisdictions approach these issues? In the US literature, a distinction is made between a 'least restrictive' CTO and a 'preventative' CTO

(Slobogin, 1994). Least restrictive CTOs originate from civil libertarian aims to offer community treatment as a least restrictive alternative to hospitalization (Hiday, 2003). Preventative CTOs arose from the desire to implement measures intended to avoid predictable deterioration in a patient's mental state resulting in dangerousness (Stefan, 1987).

Least restrictive CTOs

In general, least restrictive CTOs share the following features, suggesting a particular position with respect to the fundamental CTO design issues outlined above.

(1) The criteria are identical for community and hospital treatment orders.
(2) The CTO enables treatment for mental states which have already deteriorated.
(3) The CTO provides a least restrictive alternative to hospital treatment for any involuntary patient if appropriate.

An exemplar of this type of design is the pre-1984 North Carolina statute (see Table 2.1).

Preventative CTOs

Preventative CTOs share the following features, suggesting an alternative position with respect to the fundamental CTO design issues outlined above.

(1) The criteria for community treatment orders and hospital treatment orders are separate.
(2) The CTO enables treatment to prevent the deterioration of mental states resulting in dangerousness.
(3) The CTO provides a component of psychiatric management (a 'tool in the therapeutic armamentarium') for which there are specific indications.

An exemplar of this type of design is New York's Kendra's Law (Perlin, 2003; see Table 2.2).

2.4 International comparisons

To facilitate understanding and interpretation of the research literature presented in this report, we have provided an outline of the CTO arrangements that exist within each jurisdiction. We present an overall description of the CTOs in each country, followed by country by country examples of the CTOs currently in place in Tables 2.1-4. These descriptions are organized according to whether the CTOs are recognized as being least restrictive CTOs, preventative CTOs, or those where the distinction is blurred. In countries where CTOs vary across states or provinces, we have selected those with important design features which help contextualize the empirical data presented later. In addition, we have summarized the arrangements to be implemented in Scotland in October 2005. For all jurisdictions, the year in which each CTO was introduced is provided to indicate how long they have been established. The eligibility criteria are listed, and the possible duration, enforcement and reciprocity arrangements are also summarised.

2.4.1 Multiple jurisdictions with either least restrictive or preventative CTOs

The USA

Although the USA has examples of both least restrictive and preventative CTOs, the majority of current US mental health statutes provide for least restrictive CTOs, many of which are little used (Torrey and Kaplan, 1995; Miller, 1985). However, since the mid 1980s, there has been a shift away from least restrictive CTOs towards the design of preventative CTOs within mental health statutes (Stefan, 1987; Hiday, 2003; Appelbaum, 2003). With one exception (Wisconsin, dealt with separately in section 4.3), CTOs in the USA can be classified as being either least restrictive or preventative.

US mental health law has been substantially influenced by the *Lessard* decision (Slobogin, 1994). This three-judge federal district court ruling stipulated that the criteria for involuntary hospital treatment was imminent dangerousness ("extreme likelihood that if the person is not confined he will do immediate harm to himself or others") (Lessard v Schmidt, 349 F Supp 1078 (ED Wis 1972). This ruling was influential in the US in changing the commitment criteria from need-for-treatment to dangerousness – a change aimed at protecting civil liberties (Miller, 1992; Munetz et. al, 2003).

Concern about the adequacy of the dangerousness standard as the necessary condition for the involuntary treatment of the chronically mentally ill subsequently led to attempts in the US to broaden the commitment criteria. Risk of physical or mental deterioration and incapacity to consent to treatment were mooted as additional criteria. Inclusion of these broader criteria has attracted criticism from civil libertarians, leading to questions concerning constitutional compatibility resulting in inconsistencies across US jurisdictions (Miller, 1992).

Most US jurisdictions require a patient to be imminently dangerous to be civilly committed (Kress, 2000). In judicial settings that follow the *Lessard* decision and uphold the imminent dangerousness criteria, it follows that:

(1) if the criteria for community and hospital commitment are identical (as in least restrictive CTOs), tribunals are *ceteris paribus* unlikely to judge a committable patient suitable for community treatment, and;
(2) if a CTO is to prevent imminent dangerousness, it will require criteria for current dangerousness which are less stringent than those for hospital treatment orders. This will require a modification of the imminent dangerousness criteria for the purposes of CTOs and may provoke constitutional challenge (Slobogin, 1994; Perlin, 2003).

Thus, US jurisdictions that uphold the imminent dangerousness criteria can find themselves in some difficulty. Least restrictive CTOs are constitutional but hard to find a use for; preventative CTOs are easier to find a use for but risk constitutional challenge. Nevertheless, one can understand why CTO reform in the USA has been moving away from the inherent design difficulties of least restrictive CTOs and towards preventative CTOs. It is also possible to see why doing this has attracted concerns from civil libertarians.

Tables 2.1 and 2.2 summarise examples of least restrictive and preventative CTOs in the US by jurisdiction.

Table 2.1 Example of US least restrictive CTOs

Jurisdiction	Details of CTO
North Carolina, USA (historical)	Introduced 1977, expired 1985 CTO ordered by Court Criteria (identical to inpatient criteria) 1. Mental disorder 2. Dangerousness to self or others Duration: 3 months. Procedural reviews. Enforcement: police powers to take the respondent into custody and return him to the state hospital. Reciprocity arrangements: left to the discretion of the community mental health centres. Source: Miller and Fiddleman (1984); Hiday and Goodman (1982)

N.B. the majority of US jurisdictions maintain least restrictive CTOs with similar structures to the above.

Table 2.2 Examples of US preventative CTOs

Jurisdiction	Details of CTO
North Carolina, USA	Introduced 1985 CTO ordered by Court following petition Criteria (distinct from inpatient criteria) 1. The respondent is mentally ill; 2. The respondent is capable of surviving safely in the community with available supervision from family, friends, or others; 3. Based on the respondent's psychiatric history, the respondent is in need of treatment in order to prevent further disability or deterioration that would predictably result in dangerousness as defined 4. The respondent's current mental status or the nature of the respondent's illness limits or negates the respondent's ability to make an informed decision to seek voluntarily or comply with recommended treatment. Duration: initial order not in excess of 90 days. The court may order outpatient commitment for an additional period not in excess of 180 days at rehearing. No maximum number of rehearings. Procedural reviews. Enforcement: the physician or centre shall notify the court who shall issue an order to a law-enforcement officer or other person authorized to take the respondent into custody and take him immediately to the outpatient treatment physician or centre for evaluation. The law-enforcement officer may wait during the examination and return the respondent to his home after the examination. Reciprocity arrangements: patient rights to appropriate care stated.

	Source: http://www.psychlaws.org/LegalResources/StateLaws/NorthCarolinastatute.htm
New York, USA "Kendra's Law" .	Introduced 1999 CTO ordered following court assessment after petition. Criteria (distinct from inpatient criteria) 1. is at least 18 years old: and 2. is suffering from a mental illness; and 3. is unlikely to survive safely in the community without supervision, based on a clinical determination; and 4. has a history of lack of compliance with treatment for mental illness that has: a) at least twice within the last 36 months been a significant factor in necessitating hospitalization or receipt of services in a forensic or other mental health unit in a correctional facility or local correctional facility (not including any period during which the person was hospitalized or incarcerated immediately preceding the filing of the petition), or (b) resulted in one or more acts of serious violent behavior toward self or others, or threats of or attempts at serious physical harm to self or others within the last 48 months (not including any period in which the person was hospitalized or incarcerated immediately preceding the filing of the petition); and 5. is, as a result of his or her mental illness, unlikely to voluntarily participate in the recommended treatment pursuant to the treatment plan; and 6. in view of his or her treatment history and current behavior, the person is in need of assisted outpatient treatment in order to prevent a relapse or deterioration which would be likely to result in serious harm to self or others as defined…; and 7. it is likely that the person will benefit from assisted outpatient treatment; and 8. if the person has executed a health care proxy as defined …, that any directions included in such proxy shall be taken into account by the court in determining the written treatment plan. A court may not issue an order unless it finds that assisted outpatient treatment is the least restrictive alternative available for the person Duration: Up to 6 months. Can be renewed for subsequent periods of up to a year. Stringent procedural reviews. Enforcement: police assistance if required to transport patient to hospital. There the patient can be held for up to 72 hours for care, observation and treatment and to permit a physician to determine whether involuntary admission is required based on current dangerousness-based criteria. Reciprocity arrangements: Directors of CTO programmes must submit a report demonstrating that mechanisms are in place to ensure the delivery of the treatment plan as required by the court. Directors shall immediately commence corrective action upon receiving notice from program coordinators that services are not being provided in a timely manner. Such directors shall inform the program coordinator of such corrective action. Source: New York State Office of Mental Health (http://www.omh.state.ny.us/omhweb/Kendra_web/Ksummary.htm)

California, USA "Laura's Law"	Introduced 2001 CTO ordered following court assessment after petition. Criteria (distinct from inpatient criteria) 1. Be 18 years of age or older; 2. Be suffering from a mental illness; 3. Be unlikely to survive safely in the community without supervision, based on a clinical determination; 4. Have a history of non-compliance with treatment that has either: A. Been a significant factor in his or her being in a hospital, prison or jail at least twice within the last thirty-six months; or B. Resulted in one or more acts, attempts or threats of serious violent behaviour toward self or others within the last forty-eight months; 5. Have been offered an opportunity to voluntarily participate in a treatment plan by the local mental health department but continue to fail to engage in treatment; 6. Be substantially deteriorating; 7. Be, in view of his or her treatment history and current behaviour, in need of assisted outpatient treatment in order to prevent a relapse or deterioration that would likely result in the person meeting California's inpatient commitment standard, which is being: A. A serious risk of harm to himself or herself or others; or B. Gravely disabled (in immediate physical danger because unable to meet basic needs for food, clothing, or shelter); 8. Be likely to benefit from assisted outpatient treatment; and 9. Participation in the assisted outpatient program is the least restrictive placement necessary to ensure the person's recovery and stability. Duration: Up to 6 months. Can be extended by 180 days maximum. Stringent procedural reviews. Enforcement: statue lacks procedures for involuntary administration of medication for CTO patients. Police can be involved to transport a patient to hospital for evaluation for up to 72 hours but further detention must meet inpatient dangerousness-based criteria otherwise patient must be released. Reciprocity arrangements: counties within California who wish to use Laura's Law must demonstrate a range and standard of mental health services for both voluntary and involuntary patients. Source: A Guide to Laura's Law. The California Treatment Advocacy Coalition and The Treatment Advocacy Center, 2003 (http://www.psychlaws.org/StateActivity/California/Guide-Lauras-Law-AB1421.htm#criteria) Applebaum, P. (2003)
Florida, USA	Introduced January 2005 CTO ordered following court assessment after petition. Criteria for use (distinct from inpatient criteria) 1. The person is 18 years of age or older; 2. The person has a mental illness;

	3. The person is unlikely to survive safely in the community without supervision, based on a clinical determination; 4. The person has a history of lack of compliance with treatment for mental illness; 5. The person has: a. At least twice within the immediately preceding 36 months been involuntarily admitted to a receiving facility or treatment facility, or has received mental health services in a forensic or correctional facility. The 36-month period does not include any period during which the person was admitted or incarcerated; or b. Engaged in one or more acts of serious violent behaviour toward self or others, or attempts at serious bodily harm to himself or herself or others, within the preceding 36 months; 6. The person is, as a result of his or her mental illness, unlikely to voluntarily participate in the recommended treatment plan and either he or she has refused voluntary placement for treatment after sufficient and conscientious explanation and disclosure of the purpose of placement for treatment or he or she is unable to determine for himself or herself whether placement is necessary; 7. In view of the person's treatment history and current behaviour, the person is in need of involuntary outpatient placement in order to prevent a relapse or deterioration that would be likely to result in serious bodily harm to himself or herself or others, or a substantial harm to his or her well-being. 8. It is likely that the person will benefit from involuntary outpatient placement; and 9. All available less restrictive alternatives that would offer an opportunity for improvement of his or her condition have been judged to be inappropriate or unavailable. Duration: 6 months but may be continued by court Enforcement: The patient may be brought to a receiving facility in order to determine whether involuntary outpatient placement is still the least restrictive treatment alternative if (1) in the clinical judgment of a physician the patient has failed or has refused to comply with the treatment ordered by the court, (2) efforts were made to solicit compliance, and (3) the patient may meet the criteria for involuntary examination. Reciprocity arrangements: Law states that the CTO can be issued only if the recommended treatment services for the individual are available. Extensive patient bill of rights incorporating: • Right to individual dignity • Right to treatment • Right to express and informed patient consent • Quality of treatment • Communication, abuse, and visits- • Care and custody of personal effects of patients • Voting in public elections • Habeas Corpus • Violations • Liability for violations • Right to participate in treatment and discharge planning • Posting of notice of rights of patients

	Source: Florida Department of Children and Families. http://www.dcf.state.fl.us/mentalhealth/laws/chapter65e.pdf

2.4.2 Multiple jurisdictions with only preventative CTOs

Canada

CTOs exist in Canada in two jurisdictions, Saskatchewan and Ontario, and both can be characterized as 'preventative CTOs'. Details of each are provide in Table 2.3 below. Both Saskatchewan and Ontario have different criteria from those which apply to inpatients, both sets of criteria refer to provisions that will prevent the patients condition from deteriorating, and both aim to target patients with stipulated characteristics (essentially a 'revolving door' type patient) rather than be a least restrictive option for any involuntary patient.

Of interest is that both Saskatchewan and Ontario incorporate some form of consent criteria. These criteria exist for constitutional reasons (Dawson, 2005). The Saskatchewan CTO has an impaired decision making criteria. The Ontario CTO, however, has the more complex criteria stipulating that either a patient consent to the CTO plan or, if he/she lacks capacity, the substitute decision maker must consent to the CTO plan. Patients lacking capacity have to be processed through a separate consent and capacity board, and it is generally agreed that applying CTOs to patients who retain capacity without consent is unconstitutional (Dawson, 2005). This feature of the Ontario CTO emerges as an issue for the psychiatrists applying it (see Chapter 4, section 4.2).

Table 2.3 Canadian preventative CTOs

Jurisdiction	Details of CTO
Saskatchewan, Canada	Introduced in July 1995 CTO ordered following psychiatric assessment. Criteria for use (distinct from inpatient criteria) 1. A person must suffer from a mental disorder for which he or she is in need of treatment or care that can be provided in the community. 2. In the previous 2 years the person must have: a) spent at least 60 days as an involuntary inpatient in a psychiatric facility, or b) been an involuntary inpatient in a psychiatric facility on 3 or more separate occasions, or c) previously been the subject of a community treatment order. 3. There must be a likelihood that if the person were not to receive treatment while residing in the community, he or she would likely cause harm to self or others or suffer substantial mental or physical deterioration as a result of the disorder 4. The services the person requires in order to reside in the community must be available in the community. 5. The person is unable to understand and to make an informed decision regarding his or her need for treatment, care, or supervision as a result of the mental disorder. 6. The person must be capable of complying with the requirement for treatment and supervision contained in the CTO. Duration: valid for 3 months after which must be reviewed by Review Boards who also oversee inpatient certification. No maximum duration. Enforcement: Police can remove patient to emergency room where medication can be given if deemed safe or the psychiatrist can admit as voluntary or involuntary patient. Source: O'Reilly et al (2000) and personal communication.
Ontario, Canada "Brian's Law"	Introduced 2000 CTO ordered following psychiatric assessment. Criteria (distinct from inpatient criteria) 1. in the last three years, the person has been an inpatient in a psychiatric facility two times or more or for a total of at least 30 days, or has been on a CTO; and, 2. a community treatment plan has been developed; and, 3. the physician has examined the person in the 72 hours before the plan is entered into and believes: a. because of his or her mental illness, the person needs continuing treatment or care and continuing supervision, if he or she lives in the community; b. and, if the person isn't an inpatient in a psychiatric facility, that he or she meets the conditions for assessment; and, c. if the person doesn't get continuing treatment or care and continuing supervision while living in the community, he or she is likely, because of mental illness, to cause serious bodily harm to himself or herself or to someone else, or suffer

	substantial mental or physical deterioration or serious physical impairment; and, d. the person is able to comply with the plan; and, e. the treatment or care and supervision are available in the community; and, 4. the physician has consulted with the health practitioners or other persons proposed to be named in the plan; and, 5. the physician is satisfied that the person subject to the order and his or her substitute decision-maker (if any) have consulted with a rights adviser and been told about their legal rights; and, 6. the person or his or her substitute (if the person is incapable) consents to the plan. Duration: 6 months and may be renewed thereafter for 6 month periods following court review. No maximum. Enforcement: Police may transport patient to a psychiatrist for an examination. Compulsory treatment in hospital permissible if the patient is mentally disordered and meets criteria for current dangerousness **or** meets "deterioration criteria" which are: 1. The physician has examined the person; 2. The person has previously received treatment for mental disorder of an ongoing or recurring nature that, when not treated is of a nature or quality that likely will result in serious bodily harm to the person or to another person or substantial mental or physical deterioration of the person or serious physical impairment of the person; 3. The person has improved clinically as a result of the treatment; 4. The person is suffering from the same or similar mental disorder for which he or she received treatment in the past; 5. Given the person's history of mental disorder and current mental or physical condition the person is likely to cause serious bodily harm to himself or herself or another person or is likely to suffer substantial mental or physical deterioration or serious physical impairment; and 6. The person is incapable of consenting to his or her treatment in a psychiatric facility and the person's substitute decision-maker has consented. Reciprocity arrangements: general statement of responsibility of those named on treatment plan to be responsible for the general supervision and management of the order. Source: Ontario, Ministry of Health and Long Term Care (http://www.health.gov.on.ca/english/public/program/mentalhealth/mental_reform/brians_law.html) And Dr R.L O'Reilly, University of Western Ontario personal communication.

2.4.3 Jurisdictions having CTOs with both 'least restrictive' and 'preventative' features

There are a number of jurisdictions with CTOs that cannot be classified as being either least restrictive or preventative, but which instead share features of both. The criteria for involuntary hospital treatment may be considerably broader than the imminent dangerousness standard, and consistent with the need-for-treatment. Most jurisdictions outside North America, and the US state of Wisconsin, would fall into this category.

Such jurisdictions may explicitly incorporate concepts of prevention of deterioration (Victoria, Australia), include 'liability' to deteriorate (Israel) or allow considerations of health and the intermittent nature of the illness – i.e. longitudinal considerations (New Zealand). In these judicial settings it then follows that:

1) Non-imminent dangerousness is likely *ceteris paribus* to be found by tribunals as compatible with community-based treatment orders.
2) Prevention of deterioration can be justified using criteria for hospital treatment alone.

This would imply that jurisdictions that do not use imminent dangerousness as the necessary condition for compulsion allow for CTOs with different combinations of features than those characterizing the least restrictive and preventative CTOs outlined above. This indeed is the case in practice, so the distinction between 'preventative' and 'least restrictive' CTOs blurs in jurisdictions with broader criteria for commitment.

We outline below the CTO arrangements for New Zealand, different states in Australia, Israel, Wisconsin USA, and Scotland. These are described and summarized in Table 2.4.

New Zealand

New Zealand's CTO scheme was introduced in 1992. The criteria leave considerable room for clinical discretion. Dawson (2005) describes the introduction of this scheme as simply replacing the well-established prior practice of granting involuntary patients 'trial leave' from hospital which had been granted for some years on rather similar criteria to those of the CTO. CTOs were widely viewed as establishing clearer criteria for a form of care which was already practiced and accepted, and providing better access to independent review. Dawson reports that the introduction of CTOs attracted little opposition at the time on ethical or legal grounds (Dawson, 2005).

Australia

CTOs exist in all Australian states. Victoria was the first to introduce CTO in 1986 following five years of consultation (Power, 1999). The Victorian CTO is based on a model of clinical discretion (Dawson, 2005) and seems to embody concepts of 'conditional release', 'least restriction' and 'preventative commitment' all in one procedure (Power, 1999). Other Australian jurisdictions such as New South Wales use a more judicially based model of CTO (Power, 1999) and one which has been described as occupying functions similar to mental health courts in the USA (Dawson,

2005). The Western Australian CTO, like Victoria, uses clinical discretion, but there is greater control on the duration of the CTO, with six months being the maximum duration.

For Table 2.4, we have selected the CTOs of Victoria and Western Australia. These jurisdictions cover rather different populations of the country. Victoria, the south eastern Australian state includes the metropolis of Melbourne and has Australia's oldest CTO; Western Australia, a larger, less densely populated Australian state, has a more recent CTO established in 1996. Most of the Australian empirical studies have been performed in these two jurisdictions.

Israel

CTOs were introduced in Israel in 1991 as part of a wholesale reform of the Israeli Mental Health Act (1995). The 1955 Act appointed psychiatrists as principle decision makers with regard to involuntary treatment, and provided little by way of inbuilt judicial review. The new CTO law was modelled after American CTO law, that in the words of Ajzenstadt and others "sought to reconcile liberty interests with the need to provide treatment and care for mentally ill persons following the principle of providing treatment in the setting least restrictive of personal liberty" (Ajzenstadt et al, 2001). It seems that this CTO arose in the context of a wish to introduce greater judicial review of the involuntary treatment of the mentally ill on civil libertarian grounds.

Although the criteria are formally the same as for a hospital treatment order, there is room for some clinical interpretation. In addition, unlike least restrictive CTOs, the criteria around the need to provide treatment are broad and allow for the provision of treatment to prevent deterioration.

Wisconsin, USA

Introduced in 1998, the Wisconsin CTO is unusual in the US in having features of least restrictive CTOs while including an explicitly preventative element. A CTO should be the least restrictive option which aims to maximize a patient's choices at any given time, facilitating easy movement from the hospital to the community and vice versa. There is no distinction between in patient and outpatient criteria, but they also allow for the provision of treatment to prevent deterioration of the condition.

Scotland

The Scottish CTO, part of the Mental Health (Care and Treatment) (Scotland) Act 2003, came into force in October 2005. This was the first CTO to be introduced in Europe.

Reform of mental health legislation in Scotland has, in many ways, paralleled the reform process in England and Wales. In the area of compulsory community treatment, issues surrounding 'leave of absence' and 'Community Care Orders (CCOs)' in prior Scottish mental health legislation are analogous to those surrounding 'conditional leave' and 'supervised discharge orders' in England and Wales.

The criteria for Scotland's CTO are very similar criteria to those for a hospital treatment order, but allow for the provision of treatment to prevent deterioration. The CTO in Scotland is also regarded as a component of psychiatric management for which there are specific indications ('the making of the CTO is necessary').

Scotland will have a CTO which, like the supervised treatment order in the proposed amendment to the 1983 Mental Health Act for England and Wales, contains a broad definition of mental disorder. However, unlike England and Wales, the criteria for the Scottish CTO include, as well as risk, an explicit reference to prevention and a modified incapacity criteria worded 'significant impairment of decision making'. The final draft code of practice (Vol 2, p13, available at http://www.scotland.gov) suggests impaired decision making is to be understood as primarily a disorder of the mind rather than a disorder of brain and cognition.

Table 2.4 – Examples of CTOs with both 'preventative' vs. 'least restrictive' features

Jurisdiction	Details of CTO
New Zealand	Introduced 1992 CTO ordered following either psychiatric assessment of an inpatient or court review of an inpatient. Criteria (not distinct from inpatient criteria) 1. Serious mental disorder (of either a 'continuous' or 'intermittent' nature) 2. Serious dangers to the health or safety of the patient, or of others, or the patient's seriously diminished capacity for self-care. 3. The availability of appropriate outpatient care and social support. Duration: initial maximum duration of 6 months. It may be renewed for a further 6 months by a Court. If the order is renewed again (after a year) it becomes indefinite in duration. Enforcement: Not formalized. Doubtful legality to treat forcibly in the community. Legislation permits rapid return to hospital if patient not compliant. Reciprocity arrangements: not specified. Source: Dawson (2005)
Western Australia	Introduced 1996 CTO ordered following psychiatric assessment. Criteria (not distinct from inpatient criteria) 1) treatment in the community would not be inconsistent with criteria for involuntary hospitalization (these are dangerousness criteria) 2) suitable objectives can be made for the care of the patient in the community 3) a medical practitioner or mental health practitioner will be available to ensure that the patient receives the treatment; and 4) a psychiatrist will be available to supervise the order Duration: 3 months. Can be extended by 3 months once only making maximum duration 6 months. Enforcement: police assistance if required after written notice to patient. Police can transport patient to a place specified for treatment and be detained by police until treatment is given. Reciprocity arrangements: not specified. Source: Office of the Chief Psychiatrist. Community Treatment Orders: A Practitioners' Guide Mental Health Act 1996. Department of Health. Government of Western Australia. 2002
Victoria, Australia	Introduced 1986 CTO ordered following psychiatric assessment.

	Criteria (not distinct from inpatient criteria) 1) the person appears to be mentally ill 2) the person's mental illness requires immediate treatment and that treatment can be obtained by making a CTO 3) because of the person's mental illness, the person should be made subject to a CTO for his or her health or safety (whether to prevent a deterioration in the person's physical or mental condition or otherwise) or for protection of members on the public; 4) the person has refused or is unable to consent to the necessary treatment for the mental illness; and 5) the person cannot receive adequate treatment for the mental illness in a manner less restrictive of that person's freedom of decision and action. Duration: 12 months. Can be extended by 12 month periods. No maximum on number of extensions. Enforcement: CTO is revoked and patient recalled to hospital. Police assistance legal but should be avoided where alternative are available and appropriate. CTO may be re-issued immediately when patient leaves hospital. This may be the day after compulsory treatment is given. Reciprocity arrangements: not specified. Source: Community Treatment Order Guidelines 2001. Chief Psychiatrist. State Government. Victoria. Dawson (2005)
Israel	Introduced 1991 CTO ordered following psychiatric assessment. Criteria (formally identical to inpatient criteria though the psychiatrist may only 'realize' that a patient needs treatment for CTO whereas they must be 'convinced' that patient needs treatment for inpatient commitment): The person is suffering from an illness as a result of which their capacity for judgement or for assessment of reality is severely impaired, and one of the following: 1. They are liable to endanger themselves or other persons by immediate physical danger. 2. They are liable to endanger themselves or other persons by a physical danger which is not immediate. 3. That their ability to attend to their basic needs is severely impaired. 4. That they are causing severe mental anguish to others, in such a way as to interfere with their orderly existence. 5. That they are causing severe damage to property. Duration: initial period not to exceed 6 months. Possibility for 6 month extensions with no maximum on number of extensions. Enforcement: Unclear Reciprocity arrangements: Unclear Source: Bar El et al. (1998). Ajzenstadt, et al. (2001).
Wisconsin, USA	Introduced 1998 CTO ordered by court – no distinction between outpatient and inpatient criteria. Also option of a "settlement" agreement" in which the patient before the court waives the hearing on the condition of agreement to 90 days of treatment. This provision is reported as widely used to coerce treatment while foregoing stigma.

	Criteria: 1. The individual is mentally ill or drug dependent or developmentally disabled and is a proper subject for treatment. 2. The individual is dangerous because he or she does any of the following: a. Evidences a substantial probability of physical harm to himself or herself as manifested by evidence of recent threats of or attempts at suicide or serious bodily harm. b. Evidences a substantial probability of physical harm to other individuals as manifested by evidence of recent homicidal or other violent behaviour, or by evidence that others are placed in reasonable fear of violent behaviour and serious physical harm to them, as evidenced by a recent overt act, attempt or threat c. Evidences such impaired judgment, manifested by evidence of a pattern of recent acts or omissions, that there is a substantial probability of physical impairment or injury to himself or herself. The probability of physical impairment or injury is not substantial if reasonable provision for the subject individual's protection is available in the community and there is a reasonable probability that the individual will avail himself or herself of these services. d. Evidences behaviour manifested by recent acts or omissions that, due to mental illness, he or she is unable to satisfy basic needs for nourishment, medical care, shelter or safety without prompt and adequate treatment so that a substantial probability exists that death, serious physical injury, serious physical debilitation or serious physical disease will imminently ensue unless the individual receives prompt and adequate treatment for this mental illness. No substantial probability of harm exists if reasonable provision for the individual's treatment and protection is available in the community and there is a reasonable probability that the individual will avail himself or herself of these services. e. For an individual, other than an individual who is alleged to be drug dependent or developmentally disabled, after the advantages and disadvantages of and alternatives to accepting a particular medication or treatment have been explained to him or her and because of mental illness, evidences either incapability of expressing an understanding of the advantages and disadvantages of accepting medication or treatment and the alternatives, or substantial incapability of applying an understanding of the advantages, disadvantages, and alternatives to his or her mental illness in order to make an informed choice as to whether to accept or refuse medication or treatment; and evidences a substantial probability, as demonstrated by both the individual's treatment history and his or her recent acts or omissions, that the individual needs care or treatment to prevent further disability or deterioration and a substantial probability that he or she will, if left untreated, lack services necessary for his or her health or safety and suffer severe mental, emotional, or physical harm that will result in the loss of the individual's ability to function independently in the community or the loss of cognitive or volitional control over his or her thoughts or actions. The probability of suffering severe mental, emotional, or physical harm is not substantial under this if reasonable provision for the individual's care or treatment is available in the community and there is a reasonable probability that the individual will avail himself or herself of these services. Duration: 6 months. Can be extended by the court as appropriate. No maximum. Stringent procedural reviews. Enforcement: the patient may refuse medication if competent but may be taken in custody if non-compliant and await a judicial hearing. Reciprocity arrangements: no formal priority for service but *de facto* priority Source: http://www.psychlaws.org/LegalResources/StateLaws/Wisconsinstatute.htm Ridgely, M. et al. (2001) Stein and Diamond (2000)

Scotland	Due to be introduced October 2005 CTO ordered by court (tribunal) – no distinction between outpatient and inpatient criteria except criterion 5. Criteria: 1. The patient has a mental disorder; 2. Medical treatment is available which would be likely to prevent that disorder worsening or be likely to alleviate the symptoms or effects of the disorder; 3. There would be a significant risk to the patient or to any other person if the patient were not provided with such treatment; 4. The patient's ability to make decisions about the provision of medical treatment is significantly impaired because of their mental disorder; and 5. The making of the compulsory treatment order is necessary. Duration: Initially up to 6 months. Can be extended for another 6 months. Thereafter yearly. No maximum. Enforcement: Police may assist to take a community-based patient to a hospital and detained there for up to 72 hours. The person could then be detained in hospital for up to a further 28 days on the approval of the person's responsible clinician. This detention period would allow the person's responsible clinician to decide whether they need to apply to the Tribunal for a variation of the terms of the order. Reciprocity arrangements: duty imposed on the responsible clinician to inform the Tribunal if any health services required by the treatment plan are not being delivered. Source: Scottish Executive: Health (http://www.scotland.gov.uk/Publications/2003/11/18547/29201)

2.5 Parity with proposals for England and Wales

For the purposes of comparison, using the concepts presented above, we have summarised the CTO arrangements originally detailed in the Mental Health Bill for England and Wales, as well as those outlined in the more recent March 2006 Mental Health Act (1983) amendment proposals set out in the Department of Health briefing sheets (see Table 2.5). It should be noted that the full proposals were published in November 2006, after this report was first submitted to the Department of Health. It was considered to be beyond the scope of this report to scrutinise the November 2006 proposals in more detail.

Based on the information currently available, the proposals apply the same criteria for community treatment as for treatment in hospital. The mental disorder must be of a nature or degree that treatment is necessary to protect the patient or others from harm. The criteria outlined in the 2004 draft Mental Health Bill were generally interpreted as describing mental states which had already deteriorated and seemed to suggest that non-resident orders would be an option for all patients who met the criteria for compulsory treatment, rather than being targeted towards specific groups. Accordingly, the proposed CTO seemed to provide a least restrictive alternative to hospital treatment. However, the SCT proposals announced in 2006 suggest that the amendments to the 1983 Act also incorporates the concept of prevention.

The extensive US experience of developing and using least restrictive CTOs, the problems associated with their design and implementation, and their subsequent modification, may be relevant to the proposals for England and Wales. The empirical studies presented later in this report, which evaluate both least restrictive and preventative types of CTOs and those incorporating elements of both, provide helpful information about the use of alternative CTO criteria. Where possible we have indicated the type of CTO when presenting the empirical evidence in the chapters that follow, so that parallels with England and Wales might be made.

Table 2.5 – Outline of CTO proposals in mental health reforms in England and Wales

Jurisdiction	Details of CTO
2004 draft Mental Health Bill for England and Wales	Interpretation after DoH (2004) and Dawson (2005) Ordered by clinicians and approved by Tribunal no more than 28 days later. Criteria (same as inpatient): 1. The patient suffers from a 'mental disorder'. 2. This is of such a nature or degree that its medical treatment is necessary. 3. Appropriate treatment would be available. 4. The treatment is necessary to protect the patient from suicide or serious self-harm, or from serious neglect of their health or safety, or is necessary to protect others. 5. There is no other lawful way to provide the treatment. Duration: up to 6 months in the first instance. If three treatment orders have been given, or where the total period a patient has been under treatment orders is 12 months, an order of up to 12 months can then be given. Enforcement: Patient's place of residence can be specified. Non compliance with this can enable health professionals or the police to return patient to the residence or taken patient to a clinic or hospital. Patient may be required to attend for treatment at a specified place that is not a hospital (e.g. clinic). The Patient 'may be taken into custody and conveyed to the relevant hospital or place' by the responsible clinician. However, treatment without consent cannot be provided at such a place. It can only occur in a hospital. Reciprocity arrangements: Bill states that 'appropriate treatment must be available'. Beyond this DoH states that it regards the Mental Health National Service Framework rather than new mental health legislation as the right way to improve access to services (DoH (2004), p53). The Bill aims to give provision for clinicians to move patients between the community and hospital as appropriate in the least restrictive setting (DoH (2004), p27).
2006 proposed amendments to the Mental Health Act (1983)	Summary based on the Department of Health briefing sheets (Criteria-A2, April 2006; Supervised Community Treatment-A3, April 2006). Judgement about person's condition and circumstances made by the clinical supervisor with the second opinion of the Approved Mental Health Professional (AMHP). Criteria: as above (similar to those for admission for treatment under Section 3). Duration: 6 months from the time the patient leaves hospital, at one year, and then at yearly intervals. Enforcement: May be requirements (to be agreed by the clinical supervisor and the AMHP) on patients in the community to ensure they stay in contact with mental health services and to be monitored for signs of deteriorating health and, if necessary, recalled to hospital. Patients who refuse consent will not be treated against their will in the community, but may be recalled to hospital for treatment where clinically necessary. Reciprocity arrangements: None detailed in the current information.

2.6 Summary

There is a wide variety of CTO arrangements in place in different jurisdictions. These variations often arise for constitutional reasons, appearing to reflect different responses to the conceptual problems of legislating for the care of people with mental disorders. Both *least restrictive* and *preventative* features of CTO design can be identified, and help to compare and interpret CTOs across jurisdictions. In the context of the US experience, *least restrictive* CTOs appear to be associated with specific conceptual problems and may be difficult to use in practice. *Preventative* CTOs avoid some of the conceptual difficulties, but may risk constitutional/human rights challenges. Nevertheless, in the US at least, the development and use of this type of CTO is becoming more widespread. In contrast, a whole group of CTO arrangements exist (mainly in Australasian jurisdictions) that blur the conceptual distinction between *least restrictive* and *preventative* CTO. CTO arrangements in both New Zealand and Australia are dependent on clinical discretion and both are arguably less closely specified from a judicial point of view. These types of CTO avoid some of the design difficulties of 'least restrictive' CTOs and some of the legal controversies surrounding 'preventative' CTOs.

In trying to estimate the number of people in England and Wales that would have been placed on a non-resident treatment order under the 2004 Mental Health Bill, the recent King's Fund report *A Question of Numbers* (2005) reported prevalence use rates for some of the CTOs we have described. Although reports vary widely, based on these reported rates, high use (greater than 40 CTOs per 100,000 population) is generally reported in jurisdictions where the 'least restrictive' and 'preventative' distinction is blurred (including Victoria, Australia and New Zealand). In contrast, low prevalence (less than 4 CTOs per 100,000 population) is reported in jurisdictions that have 'preventative CTOs' (New York, Ontario and Saskatchewan). More generally, US jurisdictions present a very mixed picture, but it is perhaps notable that those which have 'least restrictive' CTOs (Tennessee and Nebraska) have mid-range prevalence use figures. The King's Fund report estimated that the use of non-resident orders in England and Wales would lie between 2 and 50 per 100,000 of the general population (Lawton-Smith, 2005).

The conceptual differences and the apparent variability in CTO use provide the context for this systematic review, which describes empirical findings about CTOs in a range of jurisdictions. Of course, a variety of factors are likely to influence frequency of CTO use, and the possible links between CTO type and use may simply reflect cultural and political milieu and related arrangements for resourcing, organizing and delivering mental health care. Nevertheless, in considering the possible effects of the criteria and arrangements for the 'non-resident' orders described in the 2004 draft Mental Health Bill, these were probably best characterized as *least restrictive*. Although the March 2006 announcements suggested arrangements that similar to those set out in the 2004 Mental Health Bill, it also indicated that Supervised Community Treatment might be used explicitly for the prevention of deterioration or relapse. Perhaps then, it will most closely resemble those jurisdictions where CTO arrangements have both *least restrictive* and *preventative* features.

Chapter 3

A systematic review of data-based empirical research on CTOs

3.1 The systematic review

(a) Objective

To undertake a systematic review of national and international research relating to the use of CTOs.

(b) Target studies

The definition of CTOs used in this report has been described earlier. Briefly, for the purposes of this report, CTOs were defined as any legal framework for community mental health treatment which was authorized by a statute, located in the community with no *necessary* tie to hospitalization, and where the terms of the CTO were enforceable. According to this definition, reports of data-based empirical studies on CTOs, undertaken in any country, published or unpublished, were included in the review. All types of study design (except case-reports) were eligible for inclusion. There were no restrictions on language, year, study-quality or study sample size. Studies where part of the data was collected prior to the actual introduction of a CTO were included.

(c) Searches

A more detailed description of the searches undertaken for this review is provided in the Appendix II. Briefly, comprehensive search strategies for all relevant databases (PsycINFO, 1967 to 2005; Medline, 1966 to 2005; EMBASE, 1980 to 2005) were developed, piloted and undertaken with the assistance of a librarian. References identified by the electronic searches were initially scanned and cleaned by the librarian. Two of the reviewers (RC and GO) then read the titles and abstracts (where available) of references in the resulting electronic file. On the basis of the information available, where a study appeared to meet the inclusion criteria, or where a final decision could not be made, full copies of the articles were obtained and assessed by two reviewers (RC and GO). Doubts over relevance to the review were resolved through discussion. In addition to searching electronic databases, relevant articles were identified from the bibliographies of included articles scanned by two reviewers (RC and GO), contact with experts and those working in the field, and through sources of grey literature (including theses, dissertations, contact with stakeholder organizations and, where possible, supplementary searches of the websites of professional and government organisations in jurisdictions where CTOs are already in place).

(d) Methods

A more detailed description of the methods used in this review is provided in the Appendix II. Briefly, study information was extracted using a standardised data extraction form designed to record the aims and characteristics of the study. Studies were grouped according to their aims and were assessed on basic methodological quality issues. Extracted data were then incorporated into tables describing the study aims, methods and findings, and indicating the main limitations of the study. Accompanying text summarized the available literature around the common questions addressed and outcomes evaluated.

3.2 Results

Using the methods outlined above and detailed in the Appendix II, electronic database searches initially generated 3,545 references, resulting in 767 articles following cleaning. Following initial scanning of these, 192 full articles were obtained. Further examination resulted in the selection of 178 articles. Bibliography checks of these articles and contact with experts in the field yielded another 66 articles, giving a final total of 244 references. Of the 244 records identified, 72 were subsequently found to be data-based empirical studies relating to the use of CTOs in a number of different jurisdictions.

3.3 Overview of included studies

Brief descriptive information on the included studies is presented in Table 3.1 below. Of the 72 reports identified, 47 were studies conducted in the US, 10 in Australia, five in New Zealand, four in Canada, three in the UK, two in Israel and one was world-wide. In terms of study designs employed, nearly two thirds of the data come from either descriptive or analytic one-off or repeated cross-sectional studies, using interview, survey or existing data compiled from medical or court records over specific time-periods. Fourteen papers (19%) reported the findings from two US-based randomised controlled trials (RCTs) of CTOs, although the majority of these papers were reports of exploratory analyses of the data from one trial. One systematic review of RCTs of CTO effectiveness was identified, but this only identified the two RCTs referred to above. Of the remainder, five were cohort studies, four were qualitative studies, six were controlled before and after studies, and one was a final report of a five-year state-wide audit. Several studies had a variety of aims requiring the use of several different types of data-collection methods. Finally, three empirical studies investigating UK stakeholder views about CTOs were identified.

3.4 Presentation of findings of the systematic review

We begin in Chapter 4 by summarising the bulk of the research on the use of CTOs. More than two thirds of the available information on CTOs comes from reports of naturalistic studies describing experiences of implementing CTOs in other jurisdictions. These descriptive studies have examined different aspects of how CTOs work in practice (see section 4.1), the views of different stakeholders on CTOs (see section 4.2), and the characteristics of patients who are subject to these orders (see section 4.3). Fifty-two articles describing 43 studies were identified. Forty-eight of the 52 articles were reports of various types of cross-sectional study. The remaining four were qualitative studies (all of stakeholder's perceptions). Nine studies (all cross-sectional including one audit study)

contributed information on more than one topic. Given the descriptive nature of all these studies, it is important to note that they cannot provide evidence of causal associations between the use of CTOs and any outcome of interest, nor can they tell us about the effectiveness of CTOs, however defined.

In Chapter 5 we provide a synthesis of all those studies that report the possible 'effectiveness' of CTOs, measured on a variety of different outcomes. We first describe the two studies that have employed randomisation procedures to allocate patients to CTOs, using data taken from the original reports of the trials themselves, as well as from the systematic review/meta-analysis of these RCTs. Both trials were undertaken in the US, one in New York, one in North Carolina (see section 5.2). However, the bulk of the literature examining CTO effectiveness (using a variety of different outcomes) comes from eleven reports of seven non-randomised comparative studies. Five are cohort studies, six are controlled before and after comparisons (see section 5.3). Fourteen additional reports described the findings of exploratory data analyses investigating potential associations between a range of variables and CTO outcomes; two of these used patients from the New York RCT, while the remaining twelve analysed data collected as part of the North Carolina RCT referred to above (see section 5.4).

Finally, we identified three studies that examined UK-based stakeholder views. Rather than presenting these alongside studies that relate to existing CTOs from other jurisdictions, we have chosen to summarise these in the discussion section, presented in Chapter 6.

Table 3.1 – Overview of empirical studies contributing to the review

Study reference	Jurisdiction	Objective	Design	Chapter /Section
Dawson and Romans (2001)	New Zealand, Otago	Patterns of use	Analytic cross-sectional (naturalistic follow-up)	4.1
Fernandez and Nygard (1990)	US; North Carolina	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Geller et al (1997)	US; Massachusetts	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Hiday and Goodman (1982)	US; North Carolina	CTO outcomes	Descriptive cross-sectional – (naturalistic follow-up)	4.1
Jaworowski and Guneva (2002)	Australia; Victoria	Consistency in decision-making	Descriptive cross-sectional – survey	4.1
Miller (1985)	US; all states plus District of Columbia, Puerto Rico and the Virgin Islands	Availability and procedures (awareness of CTO provisions); patterns of use	Descriptive cross-sectional – survey	4.1
Miller (1992a)	US; all states plus District of Columbia	Availability and procedures (awareness of CTO provisions); patterns of use	Descriptive cross-sectional – survey	4.1
Miller (1992b)	US; 8 states	Intro/changes in law	Descriptive cross-sectional (before/after)	4.1
Miller and Fiddleman (1982)	US; North Carolina	Intro/change in law	Analytic cross-sectional (before/after)	4.1
Miller and Fiddleman (1984)	US; North Carolina	Intro/change in law	Analytic cross-sectional (before/after)	4.1
Muirhead and Harvey (2000)	Australia; Victoria	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Munetz et al (1996)	US; Ohio	CTO outcomes	Analytic cross-sectional (before/after)	4.1

New York State Office of Mental Health (2005)	US; New York	Patterns of use; CTO outcomes	Descriptive cross-sectional – audit	4.1
O'Brien and Farrell (2005)	Canada; Ontario	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Ozgul and Brunero (1997)	Australia; SW of Sydney	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Power (unpublished)	Australia, Victoria	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Rohland et al (2000)	US; Iowa	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Torrey and Kaplan (1995)	US; All states plus District of Columbia	Patterns of use	Descriptive cross-sectional – interviews	4.1
Van Putten et al (1988)	US; Arizona	Patterns of use; CTO outcomes	Analytic cross-sectional (before/after)	4.1
Zanni and de Veau (1986)	US; Washington DC	CTO outcomes	Analytic cross-sectional (before/after)	4.1
Borum et al (1999)	US; North Carolina	Patients perceptions of CTOs	Descriptive cross-sectional – interviews	4.2
Boudreau and Lambert (1993)	Canada; Ontario	Mixed group perceptions of CTOs	Descriptive cross-sectional – survey	4.2
Currier (1997)	New Zealand; national	Mental health professionals perceptions of CTOs	Descriptive cross-sectional – survey	4.2
Dawson and Romans (2001)	New Zealand, Otago	Mental health professionals perceptions of CTOs	Descriptive cross-sectional – survey	4.2
Gibbs et al (2004)	New Zealand	Mixed group perceptions of CTOs	Qualitative study	4.2
Gibbs et al (2005)	New Zealand; Otago	Patients perceptions of CTOs	Qualitative study	4.2
Hiday et al (1999)	US; North Carolina	Patients perceptions of CTOs	Descriptive cross-sectional – interviews	4.2

Lohrer et al (2002)	US; New York State	Family members perceptions of CTOs	Descriptive cross-sectional – survey	4.2
McFarland et al (1990)	US; Oregon	Family members perceptions of CTOs	Descriptive cross-sectional – survey	4.2
New York State Office of Mental Health (2005)	US; New York	Patients perceptions of CTOs	Descriptive cross-sectional – interviews	4.2
O'Reilly et al (2000)	Canada; Saskatchewan	Mental health professionals perceptions of CTOs	Descriptive cross-sectional – survey	4.2
Ozgul and Brunero (1997)	Australia; SW of Sydney	Mixed group perceptions of CTOs	Descriptive cross-sectional - survey	4.2
Romans et al (2004)	New Zealand; national and Otago	Mental health professionals perceptions of CTOs	Descriptive cross-sectional – survey	4.2
Scheid-Cook (1993)	US; North Carolina	Mixed group perceptions of CTOs	Qualitative study	4.2
Swartz et al (2003)	US; North Carolina	Mixed group perceptions of CTOs	Qualitative study	4.2
Swartz et al (2003)	US; North Carolina	Patients perceptions of CTOs	Descriptive cross-sectional – interviews	4.2
Swartz et al (2004)	US; North Carolina	Patients perceptions of CTOs	Descriptive cross-sectional – interviews	4.2
The Centre for Addiction and Mental Health and the Canadian Mental Health Association (2005)	Canada; Toronto and Ontario	Mental health professionals perceptions of CTOs	Descriptive cross-sectional – survey	4.2
Bar el et al (1998)	Israel; Jerusalem	Recipient characteristics	Descriptive cross-sectional – survey	4.3
Dawson and Romans (2001)	New Zealand, Otago	Recipient characteristics	Descriptive cross-sectional - survey	4.3
Durst et al (1999)	Israel; Jerusalem and Southern Districts	Recipient characteristics	Descriptive cross-sectional – survey	4.3
Hiday et al (1999)	US; North Carolina	Recipient characteristics	Descriptive cross-sectional – interviews	4.3

McDonnell and Bartholomew (1997)	Australia, Victoria	Recipient characteristics	Descriptive cross-sectional – interviews	4.3
Monahan et al (2005)	US; Chicago, Durham, San Francisco, Tampa, Worcester	Recipient characteristics	Analytic cross-sectional – interviews	4.3
New York State Office of Mental Health (2005)	US; New York	Recipient characteristics	Descriptive cross-sectional – audit	4.3
Ozgul and Brunero (1997)	Australia; SW of Sydney	Recipient characteristics	Descriptive cross-sectional – interviews	4.3
Power (unpublished)	Australia, Victoria	Recipient characteristics	Descriptive and analytic cross-sectional - survey	4.3
Rohland (1998)	US; Iowa	Recipient characteristics	Descriptive cross-sectional – survey	4.3
Scheid-Cook (1987)	US; North Carolina	Recipient characteristics	Descriptive and analytic cross-sectional – survey	4.3
Swartz et al (2005)	US; Chicago, Durham, San Francisco, Tampa, Worcester	Recipient characteristics	Analytic cross-sectional - interviews	4.3
Wood and Swanson (1985)	US; Nebraska	Recipient characteristics	Descriptive and analytic cross-sectional – survey	4.3
Xiao et al (2004)	Australia; Western Australia	Recipient characteristics	Descriptive and analytic cross-sectional – record linkage study	4.3
Kisely et al (2005)	All jurisdictions	CTO outcomes	Systematic review and meta-analysis of RCTs	5.2
Swartz et al (1999)	US; North Carolina	CTO outcome	RCT (North Carolina)	5.2
Steadman et al (2001)	US; New York State	CTO outcomes	RCT (New York)	5.2

Burgess et al (unpublished)	Australia, Victoria	CTO outcomes	Retrospective cohort study using case-register	5.3
Bursten (1986)	US; Tennessee	CTO outcomes	Analytical controlled before and after study	5.3
Geller et al (1998)	US; Massachusetts	CTO outcomes	Analytical controlled before and after study	5.3
Geller et al (1997)	US; Massachusetts	CTO outcomes	Analytical controlled before and after study	5.3
Hiday and Scheid-Cook (1987)	US; North Carolina	CTO outcomes	Prospective cohort study	5.3
Hiday and Scheid-Cook (1989)	US; North Carolina	CTO outcomes	Prospective cohort study	5.3
Hiday and Scheid-Cook (1991)	US; North Carolina	CTO outcomes	Prospective cohort study	5.3
Kisely et al (2004)	Australia; Western Australia	CTO outcomes	Retrospective cohort study using database and matching and multivariate analyses	5.3
Power (unpublished)	Australia, Victoria	CTO outcomes	Analytic controlled before and after study	5.3
Preston et al (2002)	Australia; Western Australia	CTO outcomes	Analytical controlled before and after study	5.3
Vaughan et al (2000)	Australia; New South Wales	CTO outcomes	Analytical controlled before and after study	5.3
Elbogen et al (2003)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Groff et al (2004)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Hiday et al (2002)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina)	5.4
Rain et al (2003)	US; New York State	Characteristics associated with outcome	Exploratory analyses using cohort linked to RCT (New York)	5.4
Steadman et al (2001)	US; New York State	Characteristics associated with	Exploratory analyses using RCT (New York)	5.4

		outcome		
Swanson et al (2000)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Swanson et al (2001)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Swanson et al (2003)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Swartz et al (1999)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Swartz et al (1999)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina)	5.4
Swartz et al (2001)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Swartz et al (2001)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Swartz et al (2002)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Wagner et al (2003)	US; North Carolina	Characteristics associated with outcome	Exploratory analyses using RCT (North Carolina) data	5.4
Pinfold and Bindman (2001)	UK	Stakeholder views	Thematic analysis of debate	6
Crawford et al (2004)	UK	Stakeholder views	Cross-sectional survey	6
Sensky et al (1991)	UK	Stakeholder views	Cross-sectional survey	6

Chapter 4

Descriptive studies of existing community treatment orders

4.1 CTOs in practice

(a) Introduction

Twenty-one studies (15 US, four Australian, one New Zealand and one Canadian) examined different aspects of how CTOs work in practice. Two studies reported on the availability of CTOs across different jurisdictions; two reported on the effects of changes to CTO statute; four reported on patterns of use within (three studies) and between (one study) different jurisdictions; one reported on consistency in decision-making; and ten compared patients on a variety of outcomes before and after assignment to a CTO. All were single or repeated cross-sectional studies.

Cross-sectional studies can be descriptive or analytic. Descriptive studies illustrate outcomes for individuals sharing particular characteristics. Analytical studies look for associations between exposures and outcomes. However, although cross-sectional studies can be used for hypothesis generation, they cannot be used to examine causal associations. Furthermore, all cross-sectional studies are prone to a variety of biases. Consequently, the value of any formal methodological scoring is limited when comparing a group of studies that have all employed this type of design. The specific potential methodological problems in each study are listed in Tables 4.1 (i-v), a brief discussion of the problems associated these studies is provided at the end of the section, and a general discussion of the problems associated with these types of studies is provided in Appendix I. To summarise, no study in this group was prospective, none employed an independent comparison group, many involved small numbers of highly selected individuals, in all studies data on CTOs and outcomes were recorded simultaneously, many used existing data collected for other purposes and, in many cases, the methods used were poorly described. Nevertheless, these studies represent the bulk of the research work that has been undertaken in this field. They are presented here to facilitate consideration of some of the key elements of CTO implementation.

(b) The availability of CTO provisions

Two US-based descriptive cross-sectional surveys examined the availability of CTO provisions (see Table 4.1(i) for details).

Miller (1985) attempted to examine the availability, provisions and use of CTOs in all fifty US states as well as the District of Columbia, Puerto Rico and the Virgin Islands, by surveying all state mental health directors and attorneys general. The study reported such considerable disagreement between these two groups that the resulting data were unlikely to be valid, thereby preventing any reliable conclusions to be drawn about patterns of CTO use.

To identify any changes to CTO statutes and/or practices, Miller (1992a) repeated this survey of state mental health directors (only) in all 50 US states and the District of Columbia. More than half reported no changes had been made or were under active consideration in the 8 years since the previous survey, but a surprising number had revised the legislation, with 21 states reporting revisions to their statutes, 11 of which were substantive. There were likely to have been many differences in the types of CTO arrangements, their intended goals and the services available to support them across these different jurisdictions. Furthermore, the basis upon which respondents judged CTO effectiveness is unclear. That said, 17% of respondents rated their CTOs as very effective, 64% felt they were moderately effective and 19% felt that CTOs were ineffective.

(c) The effect of changing CTO legislation

The effects of changes to CTO legislation have been reported in two US-based descriptive cross-sectional surveys (see Table 4.1(ii) for details).

US, North Carolina

Miller and Fiddleman (1984) reported on how a tightening of CTO law in North Carolina impacted on the implementation of CTOs. The principal statutory changes were automatic re-hospitalisation as a consequence of CTO non-compliance, and a requirement upon judges to determine that both the hospital staff and the receiving facility staff concur with the proposed CTO. The authors reported an overall reduction in the use of CTOs, improvements in the management of the CTO process and an increase in the appropriate use of CTOs. Community Mental Health Centre (CMHC) action on treatment non-compliant patients increased, including patient re-hospitalisation as a result of this. However, the number of patients actually remaining in treatment for duration of commitment period dropped, there were no differences in the ratings of CMHC staff of the effectiveness of CTOs, and there was no difference in the effectiveness of CTO as a therapeutic modality, with provisions being followed completely in only one case after the change in the law. Despite the statutory changes, judges continued to order CTOs without the recommendation, or even against the explicit recommendation of hospital and CMHC staff. The authors suggested their evidence demonstrates that statutory changes by themselves are not sufficient to prevent inappropriate CTO use, and interpreted their data as reflecting entrenched attitudes to CTOs within, and between, different professional groups involved in the decision-making process. They concluded that legal sanctions of this nature cannot succeed without the cooperation of all parties.

Miller (1992b) investigated changes to state hospital admissions in eight states following the reintroduction of 'need-for-treatment' criteria for CTOs between 1975 and 1990. Data were presented for the two years prior to the new statute and the two years following. Perhaps unsurprisingly, in those states for which data were available, an inconsistent picture of patterns of use emerged. For example, North Carolina experienced a year on year reduction in state hospital admissions, while Southern California and Hawaii experienced a reduction in the two years before the re-introduction of 'need for treatment' criteria followed by an increase in the two years afterwards, and Alaska and Kansas

experienced an increase in the two years before the change and a decrease in the two years afterwards.

(d) Patterns of CTO use within and between different jurisdictions

Patterns of CTO use are reported in one US descriptive cross-sectional surveys, one five-year New York state-wide descriptive audit, and one other analytic cross-sectional study conducted in New Zealand (see Table 4.1(iii) for details).

Two studies provide data on patterns of use following the introduction of new legislation (Van Putten et al, 1988; New York State Office of Mental Health, 2005).

US, Arizona

Van Putten et al (1988) reported changes in the patterns of use of involuntary commitment following the introduction of CTO legislation. This study compared the characteristics of all patients in a county hospital in Tucson during the six months before a least restrictive CTO became available, and at two time points in the following 12 months. They found the total number of applications to courts for involuntary orders of any kind dropped in the first six months following the introduction of the CTO (133 to 104), but rose in the second six months (147). The percentage of males subject to involuntary commitment was significantly higher 12 months after the introduction of the CTO than in the six months before, although the distribution of diagnoses and reasons for petition were fairly similar over the 18-month study period. The percentage of petitions ultimately resulting in a court hearing declined significantly over the 18-month period (38% to 25%), although the number of patients ordered to receive treatment remained stable. The authors reported that before the CTO option became available, patients were held longer in hospital in an effort to achieve optimum stability before release. In all but one CTO case, outpatient treatment was ordered in combination with inpatient treatment. About half the CTO patients had to be re-hospitalised during the first 12 months of CTO use. The data suggested that CTO use was more popular in the first six months than in the second (21 individuals and 60% of all orders vs 14 individuals and 44% of all orders). A significant increase in the voluntary use of mental health services by patients whose CTO had ended was also observed.

US, New York State (2005)

A variety of data around the experience of introducing new legislation and patterns of use were provided by the five-year state-wide audit of Kendra's law in New York State. The introduction of Kendra's Law in 1999 was accompanied by the injection of considerable additional financial resources, as well as a requirement that each county in New York State and New York City establish a local Assisted Outreach Programme to implement the statute's provisions. The Governor's budget for 2005-2006, for example, provides more than $32 million for the operation of services in support of Kendra's Law. An additional $125 million has been allocated as ongoing funding for agencies providing existing key community based mental health services involving the expansion of case-management, developing a single point of access system and increasing the availability of other services. Furthermore, the New York State Office of Mental Health actively

monitors and oversees the implementation of Assisted Outreach Treatment (AOT) standards.

The New York State Office of Mental Health audit (2005) reported that counties and stakeholder groups state-wide found the implementation of processes to provide AOT to individuals under court orders resulted in beneficial structural changes to local mental health service delivery systems. The new mechanisms for identifying, investigating and assessing individuals reportedly enhanced accountability in local mental health service systems and improved access to services for high-need individuals. Improvements in more appropriate treatment plans, coordination of service planning and collaboration between mental health and court systems are also reported. Between November 1999 and December 2004, 10,078 individuals were referred to AOT coordinators for investigation to determine eligibility for an AOT court order. Petitions were filed for 4,041 individuals (40% of all individuals referred) and of these, petitions were granted and CTOs issued for 3,766 individuals (93% of all individuals with petitions filed). Investigations led to service enhancements rather than court orders for 2,863 individuals (28% of all investigations). About one third of CTO recipients spent six months under court order, but the majority of CTOs (64%) were renewed. The average length of time recipients remained under court order was 16 months. The most frequently cited reason for non-renewal (76%) was that the individual had improved and no longer needed court ordered services. The next most frequently cited reason (10%) was that the individual was hospitalized at the end of the CTO and a long stay in hospital was anticipated. It is worth noting that these data are the result of an audit and, as such, might be expected to provide a positive reflection of CTO use.

Otago, New Zealand

Dawson and Romans (2000) provided an indication of patterns of CTO application in a well-embedded system. These were categorised according to the pathways of patients through the compulsory treatment process and their length of stay under different sections of the Act, as follows: short term application, long-term application punctuated with readmissions and long-term application without frequent readmissions to hospital. This study showed that the largest group of CTO patients (42.5%) experienced CTO as *mixed* with involuntary hospital treatment over a period greater than a year. Only 18% of patients received a CTO for less than a year followed by no further involuntary treatment. Around one fifth (21%) of patients stayed on a CTO for more than a year without hospital treatment – this group was significantly more likely to involve patients with schizophrenia and delusions and less likely to involve patients with affective illness.

Patterns of use between different jurisdictions

Torrey and Kaplan (1995) tried to determine the extent of CTO use by conducting a survey of each US state and the District of Columbia. Telephone interviews were conducted with individuals in each state who were "knowledgeable about CTO use" locally. At that time, 35 states and the District of Columbia had CTO legislation. Three states (Georgia, Hawaii and North Carolina) used different criteria for outpatient commitment than for inpatient commitment. In only 12 states and the District of Columbia was CTO use rated as 'very common' or 'common'. Reasons for not using

CTOs included concerns about civil liberties, liability and fiscal burden, as well as lack of information and interest, the failure of some states to set enforceable consequences for non-compliance, and criteria that were too restrictive. Although this study provides some interesting insights, it should be noted that it was likely to have been limited by selection, response and interviewer bias, and the views expressed by respondents may not be generalisable.

(e) Consistency in decision-making

Australia, Victoria

One descriptive cross-sectional study examined consistency in decision-making between different professional groups involved in CTOs in practice (see Table 4.1(iv) for details). Jaworowski and Guneva (2002) surveyed clinicians and mental health review board members presenting hypothetical vignettes to investigate CTO discharge decision-making. Response rates for this study were 90% for clinicians and 74% for Mental Health Review Board members. The authors reported good levels of consistency between the two groups. Disagreement was most marked on a vignette about a young person with bipolar affective disorder who was non-compliant with medication but in clinical remission - 74% of MHRB members opted discharge of this patient compared with only 50% of clinicians. The authors suggested that justifications provided by respondents indicated that MHRB members tended to take a more cross-sectional view, being more influenced by the person's mental state at the time of the hearing where CTO discharge decisions are made, whereas clinicians tended to make a more longitudinal assessment of the psychiatric illness, taking account of historical factors. It is possible that response bias may have influenced the findings of this study. It must also be noted that only a small number of vignettes were used and no information was provided about how these were selected.

(f) Naturalistic follow-up studies of patients assigned to CTOs

Eleven cross-sectional studies (both descriptive and analytic) provided information on what happens naturalistically over time to patients placed on CTOs. Seven of these studies were undertaken in the US (Fernandez and Nygard, 1990; Geller et al 1997; Hiday and Goodman, 1982; Munetz et al, 1996; New York State Office of Mental Health, 2005; Rohland et al, 2000; Zanni and de Veau, 1986) three in Australia (Muirhead and Harvey, 2000; Ozgul and Brunero, 1997; Power, unpublished) and one in Canada (O'Brien and Farrell, 2005). All studies were retrospective and used data collected for other purposes (eg from medical databases or clinical notes). With two exceptions, sample sizes reported in these studies were small; five studies used samples of less than 50 patients, two followed less than 100 patients, one followed 125 patients, one 408 patients and two reported on more than 4,000 patients. The exact number of patients included in each study is provided in the text. It is important to note once more that the nature of these studies prevents them from yielding information about causal associations. They are instead either pre-post CTO comparisons, or reports of early experiences of implementing CTOs. As these studies were uncontrolled, their results might be explained by a number of factors related or unrelated to the CTO. Where similar outcomes were reported, the findings of these studies are summarized below (see Table 4.1(v) for details).

Hospital readmission rates

All studies reported this outcome. In general, hospital admission rates appeared to reduce following a CTO. The New York State Office of Mental Health (2005) reported reductions in the average incidence of hospitalization beyond the first 6 months of a CTO; Ozgul and Brunero (1997) reported a significant reduction in the number of people being readmitted to hospital post CTO, although they also reported a slight increase in the overall average number of admissions; Munetz et al (1996) reported significant reductions in hospital admissions based on a very small number of patients maintained on a CTO for at least 12 months; Fernandez and Nygard (1990), Geller et al (1997), Muirhead and Harvey (2000), O'Brien and Farrell (2005), Power (unpublished), Rohland et al (2000), and Zanni and de Veau (1986) all reported a reduction in the average number of hospital admissions for each client post CTO; Hiday and Goodman (1982) reported a reduction in the proportion of CTO recipients hospitalized within 90 days between the first and second year of CTO introduction.

Length of hospital stay

Although not all studies reported this outcome, reductions in average length of hospital stay were generally observed. The New York State Office of Mental Health (2005) reported a decline in the number of days hospitalized for psychiatric care after the end of court ordered treatment; Munetz et al (1996) reported reductions in lengths of stay based on a very small number of patients maintained on a CTO for at least 12 months; Fernandez and Nygard (1990), Geller et al (1997), Muirhead and Harvey (2000), O'Brien and Farrell (2005), Power (unpublished), Rohland et al (2000), and Zanni and de Veau (1986) all reported a decrease in the average number of inpatient admission days for each client post CTO.

Psychiatric emergency visits

Only two studies reported this outcome. Rohland et al (2000) reported a reduction in the average number of emergency visits during a CTO. However, although an overall reduction in the number of emergency visits was observed in a subgroup of 25 patients maintained on a CTO for more than 5 years, an initial increase was noted in the first year. Based on a small number of patients in Ohio maintained on a CTO for at least 12 months, Munetz et al (1996) also reported significant reductions in visits to the psychiatric emergency service during CTO.

Outpatient attendance

Power (unpublished) found that outpatient attendance changed from poor to good during CTO. Rohland et al (2000) recorded a significant increase in the average number of outpatient visits during the CTO. Based on a small number of patients in Ohio maintained on a CTO for at least 12 months, Munetz et al (1996) also reported a significant increase in outpatient visits during CTO.

Participation in services

The New York State Office of Mental Health (2005) audit found substantial increases in participation in case management and other services, and increased engagement in

services in the first six months of the CTO. Rohland et al (2000) reported an increase in the average number of service contacts during CTOs. Based on a small number of patients in Ohio maintained on a CTO for at least 12 months, Munetz et al (1996) also reported increased participation in day treatment sessions and contacts with case managers during CTO.

Dangerousness

Hiday and Goodman (1982) found no evidence of dangerous behaviour at the initial hearing for two fifths of all CTO respondents handled by one court in North Carolina over a two-year period. Of those with evidence of dangerous behaviour, nearly half (46%) were dangerous only to themselves. In Australia, Muirhead and Harvey (2000) found reductions in both suicide or self-harm attempts and violent or aggressive episodes in the twelve months from the start of the CTO. Also in an Australian population placed on a CTO between 1987 and 1991, Power (unpublished) reported a reduction in violence by 63% during CTO, although violent behaviour increased post CTO. The New York State Office of Mental Health (2005) audit found a reduction in harmful behaviours in the first 6 months of the CTO.

Compliance with medication

Power (unpublished) found that outpatient medication compliance changed from poor to good during CTO but declined again post CTO. The New York State Office of Mental Health (2005) audit found increased adherence to prescribed medication in the first 6 months of the CTO. Ozgul and Brunero (1997) also found CTO had a positive impact on medication compliance.

Other features

Both Power (unpublished) and Muirhead and Harvey (2000) report on CTO patients in Victoria, Australia. Power (unpublished) reported 70% improvement in global symptoms during CTO. Muirhead and Harvey (2000) found no change in the number of patients living with family post CTO, but also reported an increase in the number reporting improved family relations. The New York State Office of Mental Health (2005) audit found improved community and social functioning in the first six months of the CTO and reductions in the incidence arrest and incarceration beyond the first 6 months. This audit also found reduction in the incidence of homelessness in the first 6 months of CTO and that at the time of CTO expiry, most individuals were living either in independent or supervised community-based settings.

(g) Summary

These studies examined the experiences of implementing CTOs reflect research interests over several decades and across a wide variety of jurisdictions, all with different legislative arrangements and differing levels of community-based services. Furthermore, these studies were largely opportunistic, the designs employed can provide only descriptive data rather investigating potentially causal associations between the use of CTOs and specific outcomes, and all had methodological problems, indicating the need for cautious interpretation.

Despite these caveats, some possible insights into the implementation of CTOs are provided. The early papers suggested that, for a variety of reasons, so-called 'least restrictive' CTOs tended to be little used, and that they generated confusion and antipathy between the courts and the healthcare professionals charged with implementing them. Reasons for not using this type of CTO included the use of dangerousness as a necessary criterion for commitment (a given patient might be considered dangerous at the time of the hearing, in which case inpatient commitment is indicated, or is considered not dangerous, in which case the patient should be released), as well as civil libertarian and financial concerns and practical problems surrounding the consequences of non-compliance. A single study suggested that only a small selected group of patients received a CTO for a short period with no subsequent involuntary treatment, indicating that CTOs use might be targeted towards a certain type of patient. Several studies indicated some sort of 'bedding-in' period during the early stages of CTO use, and it is notable that a large proportion of the CTOs studied were revised in the years following their introduction. Despite this, the research seems to suggest that changes in CTO law do not translate simply into changes in practice, particularly where entrenched positions exist amongst those charged with carrying out CTO policy at the level of community mental health services. Although in some cases refinements to legislation did seem to lead to more appropriate use, views were expressed that this did not necessarily result in improved outcomes or greater effectiveness for patients. A disturbing lack of knowledge and considerable disagreement between different professional groups about local CTO arrangements was also evident in the early years of CTOs use. It is interesting that, although it appeared that mental health review board members and clinicians took account of different factors when making decisions in Victoria, Australia, similar inconsistencies in decision-making were not found, despite the fact that the Victoria CTO involves criteria that are less judicially rigorous and more determined by clinical discretion.

Findings from naturalistic studies about the outcomes for patients on CTOs are likely to be unreliable. It is true that, in general, these studies reported that hospital readmission rates, days spent in hospital, psychiatric emergency visits, and violent/harmful behaviour were all reduced, while outpatient attendance, participation in psychiatric services, medication compliance and a number of other outcomes were all reported to be improved following CTO assignment. However, although these findings may look impressive, it should be noted that the data did not always indicate positive outcomes. For example, it is possible that observed improvements in hospital readmission rates and psychiatric emergency visits only occurred in a selected group of patients who received a CTO over a longer time period. Furthermore, on the basis of this evidence, it would be impossible to know which aspects of the CTO procedure might be responsible for any observed changes. For example, it is unclear whether any changes occurring following the implementation of a CTO were the result of the legal enforcement of a treatment plan, the treatment plan itself, strengthening of community-based services, any increased resourcing of community-based services, and so on. Alterative explanations of this sort might well account for the apparently favourable findings presented in the audit of Kendra's Law in New York, since considerable additional financial resources were

allocated to strengthening and expanding existing community-based services when the CTO was first introduced.

All of the findings summarized in this section are provided by single or repeated cross-sectional studies. The main problem with these cross-sectional studies (both descriptive and analytic) is that, because CTO status and outcomes of interest were all recorded simultaneously, they cannot provide direct evidence of causality. Although the results of these studies appear encouraging for many of the outcomes studied, it is worth exploring in more detail why attributing this change to the use of CTOs would be unwarranted. The main alternative explanation is "regression to the mean". This happens when a disorder fluctuates (as is the case with severe mental illness), and treatment is initiated at a point when individuals are particularly severe. Because of the natural fluctuation in illness, a group started on treatment when their illness was severe (which by definition is likely to be the case with CTOs) will improve towards their mean level of impairment over the next weeks and months. This general improvement can mistakenly be attributed to the intervention, leading the noted epidemiologist, Geoffrey Rose to nickname the phenomenon: "the physician's friend". Thus, studies which compare pre versus post CTO data, where patients effectively act as their own controls, cannot control for the effects of regression to the mean. It is only by using appropriate comparison groups that one can overcome this problem.

The interpretation difficulties arising from probable regression to the mean in naturalistic studies are further compounded by their susceptibility to selection, observation, information and response biases, as well as the effects of confounding. The studies reviewed here frequently failed to specify the target population, usually involved small sample sizes, and often used data collected for other purposes. None of them was able to control the environment in which the CTO was provided, thereby ignoring the potentially beneficial effects of other simultaneous service changes. Finally, the analyses performed in these studies were often exploratory and were likely to have involved some 'data-dredging', with the potential for positive findings to be selectively reported.

Alternative observational study designs such as analytic cohort studies, or experimental studies such as controlled trials, would be required to properly investigate causal associations between CTO use and outcomes of interest. Where these studies exist, they are summarized in Chapter 5 of this report.

Table 4.1 CTOs in practice

(i) The availability of CTO provisions

Study	Aims and methods	Main findings	Limitations
Miller (1985)	**Study aim:** National survey of the use of CTOs. **Jurisdiction:** All 50 US states plus the District of Columbia, Puerto Rico and the Virgin Islands. It is likely that at the time of the survey all US CTOs were least restrictive. **Sample:** All state mental health directors and attorneys general. **Method:** Descriptive cross-sectional. Questionnaires sent to enquire whether CTO was permitted in the state and included questions concerning the process, duration, enforcement of the CTO. The two groups were asked to estimate the percentage of commitments to CTO and to make comments about CTO.	**Were CTOs permitted?** ❑ Mental health directors – Yes in 42 jurisdictions (79%); attorneys general – agreed in 24 of those, disagreed in 6. ❑ Mental health directors – No in 11 jurisdictions; attorneys general – agreed in 4 of those, disagreed in 5. **Broad agreement on some items:** ❑ 95% agreement on need for hospitalization prior to CTO; 85% agreement on whether maximum duration for CTO was same as for inpatient commitment. **Considerable disagreement between the two groups on many of the other items:** ❑ Only 52% agreement on whether fixed duration for CTO; only 52% agreement on whether input was obtained from the relevant outpatient facilities; only 60% agreement on whether CTO automatically provided for the involuntary administration of medication; only 60% agreement on whether CTO was a useful alternative to hospitalization; as well as who was responsible for the decision to commit to CTO. ❑ Complete agreement about re-hospitalisation procedures following non-compliance. ❑ Two thirds of the jurisdictions that permitted CTO used it as an alternative to inpatient treatment in fewer than 5% of commitments, despite requirements for commitment in the least restrictive alternative in most their statutes. ❑ A number of respondents commented on problems with effective enforcement procedures in practice.	Actual respondents uncertain - some attorneys general may have referred questions to their mental health directors. Reliability of responses uncertain. Due to inconsistencies in data, study of limited value in examining CTO provisions at that time (exact date of survey not stated). Potentially biased by missing data (many questions left unanswered; only 74% response rate by attorneys general, 100% from mental health directors).
Miller (1992a)	**Study aim:** National survey of the use of CTOs. **Jurisdiction:** All 50 US states plus the District of Columbia. **Sample:** All state mental health directors.	❑ 21 respondents indicated that their states had revised statutes governing CTO since the previous survey. ❑ 11 states had made substantive changes in the criteria for CTO, including: - CTOs made explicit in 3 states;	All state mental health directors surveyed. Accuracy of reporting uncertain.

	Method: Descriptive cross-sectional. Questionnaires sent in February 1991 asking about changes in outpatient commitment statutes and/or practices since the 1984 survey.	- Provisions for initial commitment to CTO in 2 states; - Gravely disabled standard created in 2 states; - Provisions for CTOs for criminal patients in 2 states; - Purpose of CTO being for treatment in one state. ❑ 11 jurisdictions had made procedural statutory changes, including: - 9 states established specific procedures for dealing with noncompliant patients; - 1 state codified practice in several counties to use continuances in commitment proceedings to mandate CTO; - 1 state added a requirement for a court hearing before CTO patients could be rehospitalised. - 1 authorised a longer period of CTO. ❑ Legislative or regulatory changes were under consideration in 6 states. ❑ 30 indicated no changes had been made or were under active consideration. ❑ 36 respondents rated effectiveness of CTO – 17% felt is was very effective, 64% felt it was moderately effective, 19% felt it was ineffective.	100% response rate reported.

(ii) The effect of changing CTO legislation

Study	Aims and methods	Main findings	Limitations
Miller and Fiddleman (1984) Miller and Fiddleman (1982)	**Study aim:** Does the introduction of new statute law on CTO have any effect on the actual practice of existing least restrictive CTO law. Main changes: (1) The introduction of a mechanism for automatic re-hospitalisation of patients who do not comply with their CTO. (2) Judges required to determine that both the hospital staff and the receiving facility staff concur with the proposed CTO.	**Number of CTOs (% of all commitments)** ❑ Before 38 (4.7%); After 29 (3.1%) **Hospital staff had recommended CTO** ❑ Before 44%; After 77% **CMHC had participated in commitment recommendation** ❑ Before 6.7%; After 19.2% **CMHC had participated in treatment planning before court hearing** ❑ Before 10.3%; After 18.5% **Court efficiency in notifying CMHC of CTO** ❑ Before 62.1%; After 77.8%	Retrospective study but methodology not explicit. Small study sample and based in one hospital only. Short study period.

	Jurisdiction: North Carolina, USA. Least restrictive CTO. **Sample:** All 67 patients given CTOs at John Umstead Hospital 6-months before and 6-months after October 1, 1979 (the date the new statute went into effect). **Method:** Analytic cross-sectional. Examination of court dockets, patient's hospital charts, examination of data from a 1 year follow up, interviews with community mental health centre (CMHC) staff, questionnaires mailed to staffs at the clinics and hospital and to the legal participants in the commitment process.	**CMHC action on treatment non-compliant patients** ❑ Before 42.9%; After 64.3% **Patient re-hospitalisation** ❑ Before none; After 9 patients (32%), 6 as a direct result of CMHC action **Number of patients remaining in treatment for duration of commitment period** ❑ Before 77.3%; After 50% **CMHC rating of effectiveness of CTO** ❑ Before 46.4%; After 46.1% ❑ No difference in the effectiveness of CTOs as a therapeutic modality with provisions followed completely in only 1 case ❑ Judges continued to support CTOs against recommendations of CMHC	
Miller (1992b)	**Study aim:** To investigate changes following the reintroduction of need-for treatment criteria for commitment. **Jurisdiction:** 8 US states that had added need-for-treatment criteria to their commitment codes between 1975-1990 (S & N Carolina, Alaska, Hawaii, Kansas, Texas, Colorado). **Sample:** State hospital and census data. **Method:** Not stated. Categorised as descriptive cross-sectional.	**State hospital admissions after statutory changes in criteria for CTO:** ❑ S. Carolina – 2 years before new statute N = 2,920; 1 year before new statute N = 2,786 (-5%); 1 year after statute N = 3,184 (+14%); 2 years after statute N = 3,495 (+10%). ❑ N. Carolina – 2 years before new statute N = 12,101; 1 year before new statute N = 11,425 (-6%); 1 year after new statute N = 11,014 (-4%); 2 years after new statute N = 8,104 (-26%). ❑ Alaska - 2 years before new statute N = 1,060; 1 year before new statute N = 1,146 (+8%); 1 year after new statute N = 1,138 (-0.1%); 2 years after new statute N = 1,056 (-7%). ❑ Hawaii - 2 years before new statute N = 291; 1 year before new statute N = 279 (-4%); 1 year after new statute N = 327 (+17%); 2 years after new statute N = 424 (+30%). ❑ Kansas - 2 years before new statute N = 3,990; 1 year before new statute N = 4,559 (+14%); 1 year after new statute N = 4,273 (-6%); 2 years after new statute N = 4,163 (-2%). ❑ Texas - 2 years before new statute N = 11,773; 1 year before new statute N = 12,722 (+8%); 1 year after new statute N = 12,323 (-3%); 2 years after new statute N = 12,753 (+3%). ❑ Colorado - 2 years before new statute N = 1,520; 1 year before new statute N = 1,607 (+6%); 1 year after new statute N =	Method not reported.

		1,426 (-11%). ❑ Arizona not available.	

(iii) Patterns of use within and between different jurisdictions

Study	Aims and methods	Main findings	Limitations
Van Putten et al (1988)	**Study aim:** Unclear. Authors state 'to examine the effects of CTO' and report on number of applications, percentage of CTOs and diagnoses immediately following the change. **Jurisdiction:** Arizona, USA. Least restrictive type of CTO. **Sample:** All 384 patients at a county hospital in Tucson for whom involuntary treatment was sought in an 18 month period between February 1983 and August 1984. **Method:** Analytic cross-sectional. Data collected through review of county hospital inpatient medical records, the clinic records of the mental health centres that provided outpatient services, court records, at three time intervals during the 18 month period around CTO introduction.	**Number of applications to court for involuntary treatment:** ❑ 6 months before CTO introduction=133 ❑ 6 months after CTO introduction=104 ❑ 6-12 months after CTO introduction=147 In all but one case outpatient treatment was ordered in *combination* with inpatient treatment. **CTOs as a percentage of court ordered involuntary treatment**: ❑ 6 months before CTO introduction - ❑ 6 months following CTO introduction 60% (21 individuals) ❑ 6-12 months following CTO introduction 44% (14 individuals) **Median number of days of hospitalization after court hearing:** ❑ 6 months before CTO introduction 21 days ❑ 6 months following CTO introduction 11 days ❑ 6-12 months following CTO introduction 8 days **Number of patients re-hospitalised following CTO:** ❑ 6 months following CTO introduction 9/21 ❑ 6-12 months following CTO introduction 8/14 Analysis of patient characteristics in the year before CTO suggested that patients committed to CTO may have been more severely ill than patients.	Small sample size and may have included patients more than once. Selection bias possible. Retrospective data collection and procedures unclear. Outcomes not specified a priori. Generalisability uncertain. Little contextual information. Potential changes in CTO implementation over time. Short study period.
New York State Office of Mental Health (2005)	**Study aim:** To evaluate implementation of CTO. **Jurisdiction:** New York State. **Sample:** All 4,041 referrals resulting in CTOs between November 1999 and end	**Outcomes of CTO judicial proceedings:** ❑ Referrals/investigations -10,078 individuals. ❑ Petitions filed - 4,041 individuals. ❑ Petitions granted - 3,766 individuals. ❑ Petitions were filed and granted for 93% individuals.	Retrospective study. High risk of reporting bias – eg - information often recorded or provided by

	December 2004. **Method:** Descriptive cross-sectional. Audit. OMH Central and Field Office staff record basic information on each court order in electronic tracking system; OMH collects additional information concerning CTO recipients from their case managers via a paper-based survey data collection process.	**Renewal rates:** ❑ Court orders eligible for renewal - 3,493 individuals. ❑ Court orders renewed – 2,236 individuals. ❑ Court orders renewed for 64%. **Time spent on CTO:** ❑ Over 30 months – 7%. ❑ 18 to 30 months – 17%. ❑ 12 to 18 months – 21%. ❑ 6 to 12 months – 19%. ❑ 0 to 6 months – 36% (ie initial order not renewed). **Living situation at expiry of CTO:** ❑ Independent settings, alone or with parents, spouses, other relatives, or other persons – 53%. ❑ Assisted/supported living or supervised living settings – 22%. ❑ Psychiatric inpatient settings – 12%. ❑ Incarcerated – 3%.	case-managers. Accuracy of data uncertain. Some missing data at follow-up – potential for bias. Audit to support the successful implementation of CTO.
Dawson and Romans (2000)	**Study aim:** To identify broad patterns in the use of CTOs. **Jurisdiction:** Otago, New Zealand 1st November 1992 – 24th April 1998. **Sample:** 259 patients (25.6% of all compulsorily assessed) had CTOs during the 5.4 year study period, with several placed under an order more than once. **Method:** Analytic cross-sectional. Data was extracted by medical records staff to a protocol sheet from official certificates and clinical reports held by the regional administrator for the mental health act on all records concerning the committal process.	❑ Annual numbers tended to increase (25 in 1993, 22 in 1994, 45 in 1995, 49 in 1996 and 53 in 1997). **Patterns of CTO use categorized into 3 main groups:** 1. Short term (47 patients, 18.1%) – pattern of coming under compulsory assessment and later going to a CTO with discharge within a year and no further use of compulsion. 2. Long-term with readmission (117 patients, 45.2%) – pattern of uninterrupted CTO for less than a year within a period of being under compulsory treatment for more than a year. 3. Long term stable (53 patients, 20.5%) – patients with uninterrupted CTO of more than a year without other use of compulsory treatment. **Comparisons between groups** ❑ The long-term group (2 &3) were significantly more likely to have alcohol problems (p value = 0.05), to have a diagnosis of schizophrenia (p value < 0.001) and to have displayed recent aggression to others (p value = 0.03) than the short term group. ❑ The long term stable group (3) were significantly more likely than those in the long term readmission group (2) to be delusional (p value 0.01), have a diagnosis of schizophrenia (p value 0.006) and significantly less likely to have a diagnosis of	Retrospective study. Possible biases in data sources and in selection. Limited number of clinical records and routinely collected data. Format of source data not standardised. Some incomplete data. Outcomes not stated a priori - evidence of exploratory analyses.

		affective disorder (p value 0.003).	
Torrey and Kaplan (1995)	**Study aim:** National survey of the use of CTOs. **Jurisdiction:** All 50 US states plus the District of Columbia. **Sample:** Attorneys in the state office of mental health and officials of the state Alliance for the Mentally Ill in each state, and/or other individuals selected based on their knowledge of outpatient commitment statutes and use in that state. Two individuals per state. **Method:** Descriptive cross-sectional. Open-ended interview conducted by telephone by one of authors.	**Duration of treatment in states specifying a maximum duration:** ❑ 180 days (17 states). ❑ 365 days (12 states). ❑ 2 years (2 states - Ohio and West Virginia). ❑ 5 years (New Hampshire). ❑ Indefinitely (3 states – Indiana, Utah and Vermont). **Frequency of use:** ❑ Very common - 6 states and District of Columbia. ❑ Common – 7 states. ❑ Occasional – 2 states. ❑ Rare – 13 states. ❑ Very rare – 8 states. **Reasons for not using outpatient commitment options:** ❑ Civil liberties – reluctance of MH professionals to assume policing function. ❑ Liability if CTO patients commit crimes. ❑ Lack of interest of MH centres in treating individuals with SMI. ❑ Fiscal concerns re the need to hire additional monitoring staff. ❑ Lack of hospital beds if CTO patients were not compliant. ❑ Overly stringent criteria means CTO less likely to be used. ❑ Lack of specified consequences of non-compliance. ❑ Lack of information, awareness and knowledge about CTO. ❑ Dissatisfaction about major impediments to use of CTO.	Selection bias – informants chosen on basis of knowledge of state CTO. Likely response bias. Potential for interviewer bias. Some missing data possible. Generalisability of findings uncertain.

(iv) Consistency in decision-making

Study	Aims and methods	Main findings	Limitations
Jaworowski and Guneva (2002)	**Study aim:** To determine level of consistency in decision-making between clinicians and Mental Health Review Board members regarding CTO discharge and to develop a clinical checklist to aid clinicians in deciding when to discharge. **Jurisdiction:** Victoria, Australia. **Sample:** 50 clinicians (80% psychiatrists) working for a metropolitan mental health service (90% response rate) and 50 members of the Victoria Mental Health Review Board (MHRB) (74% response rate). **Method:** Descriptive cross-sectional. Survey using vignettes describing patients on CTOs in various situations. Participants asked to decide whether to discharge the person from the CTO and to justify their decision.	❑ No statistically significant differences reported between clinicians and MHRB members on the question of whether to discharge. ❑ MHRB members generally adopted a more cross-sectional view of the person's mental state at the time of the hearing. ❑ Clinicians tended to adopt a more longitudinal perspective of the person's psychiatric illness. ❑ Guidelines perceived to be useful. ❑ Statistically significant difference between MHRB members and clinicians rating of checklist item "history of violence" MHRB rated as more useful than clinicians. ❑ No analysis possible of influence of different professional group members (psychiatrists, nurses, social workers, lawyers and community representatives).	Unclear how many vignettes used and likely to be highly selected. Incomplete response rate. Potential bias due to secondary aim of study – support for checklist developed by authors.

(v) Naturalistic follow-up studies of patients assigned to CTOs

Study	Aims and methods	Main findings	Limitations
Fernandez and Nygard (1990)	**Study aim:** To determine the impact of revised CTO laws on revolving door syndrome. **Jurisdiction:** North Carolina, US Preventive CTO without stringent enforcement mechanisms. **Sample:** All patients committed to CTOs between July 1st 1985 and June 30th 1988	**Number of hospital admission per 1000 days:** ❑ Pre CTO 3.69; Post CTO 0.66 (82.2% reduction) **Length of stay in hospital in days per 1000 days:** ❑ Pre CTO 57.6; Post CTO 38.4 (33.3% reduction)	Retrospective study. Potential selection bias. No contextual information.

	within state psychiatric facilities. N= 4,179. **Method:** Analytic cross-sectional. Data drawn from North Carolina mental health database. Demographic, clinical and hospitalization data gathered. Average number of inpatient admissions and hospital days calculated for each client before and after commitment to a CTO.		
Geller et al (1997)	**Study aim:** Unclear from article. Reports the effects of CTOs on admission rates. **Jurisdiction:** Central Massachusetts, US. **Sample:** The first 20 patients who received CTOs. Two years, divided into four 6 month segments, beginning July 1991. **Method:** Analytic cross-sectional. Used data routinely collected on client tracking system. (Part of a controlled before and after study presented in section 5.3).	**Mean number of hospital days:** ❑ Pre-treatment period - 122.8 ❑ First post-treatment period – 67.3 ❑ Second post-treatment period – 45.3 ❑ Third post-treatment period – 29.5 ❑ Fourth post-treatment period – 16.6 **Mean number of admissions:** ❑ Pre-treatment period – 1.6 ❑ First post-treatment period – 0.5 ❑ Second post-treatment period – 0.7 ❑ Third post-treatment period – 0.5 ❑ Fourth post-treatment period – 0.4	Retrospective study.
Hiday and Goodman (1982)	**Study aim:** Unclear. To evaluate the experience of respondents, including those adjudicated dangerous in court, to court ordered treatment as an alternative to involuntary hospitalization. **Jurisdiction:** North Carolina, US. **Sample**: All patients handled by one court in North Carolina in the 2 years between Jan 1978 and Dec 1979. From November 1977 the court had started to implement a least restrictive form of CTO, 2 years before the North Carolina Court of Appeals interpreted the statute to require least restrictive alternatives. N= 408. **Method:** Descriptive cross-sectional. All court ordered outpatients were followed for	**In first full year of operation (N=250):** ❑ Most used for inebriate respondents - N=167. ❑ One third for mentally ill respondents - N=83. **Following restriction to alcoholics not seen as recent recidivists to improve chances of success, second year (N=158):** ❑ Inebriate respondents – N=74. ❑ Proportion mentally ill - N=84. **Involuntary rehospitalisation within 90 days (all CTOs):** ❑ 15.7% in 1978, 9.5% in 1979. **Further results reported on mentally ill patients only:** Involuntary rehospitalisation in first year: ❑ 36% of mentally ill respondents within 90 days of CTO start (31.3% for a supplemental hearing and 4.8% with a new petition for an initial commitment). **Involuntary rehospitalisation in second year:** ❑ Proportion decreased to 22.6% (13.1% for a supplemental	Retrospective study. Selected group of patients (good risks for CTO). Data sources and collection methods not stated. Possible data dredging.

	the maximum time of an initial commitment, three months.	hearing and 9.5% for an initial hearing). **Of the respondents returned for supplemental hearings:** ❑ Over half released by court (53.8% in 1978, 54.6% in 1979). Of these, proportion involuntarily committed to state mental hospital: - 38.5% in 1978 - 36.4% in 1979 **Of those returned with new petitions:** Three quarters were involuntarily hospitalized in 1978, half in 1979. The rest were released. **Combining those returned for supplemental and initial hearings:** Less than half failing to follow CTO or dangerous enough to require involuntary hospitalization (43.3% in 1978, 42.1% in 1979). **Dangerousness:** ❑ No evidence of dangerous behaviour at initial hearing for two fifths of all respondents. ❑ Of those with evidence of dangerous behaviour, nearly half dangerous only to self (46%).	
Muirhead and Harvey (2000)	**Study aim:** To examine the effectiveness of CTOs for patients with schizophrenia. **Jurisdiction:** Victoria, Australia **Sample:** A group of 58 patients with schizophrenia from Melbourne Australia, commencing a CTO between 1996 and 1998. 20 on oral medication and 38 on depot medication. **Method:** Analytic cross-sectional. Measurements were for 12 months pre and 12 months post CTO start date.	**Number of admissions (*)** ❑ Pre 1.55; Post 0.74 **Total length of stay in days (*)** ❑ Pre 33.22; Post 6.59 **Number of Crisis service referrals** ❑ Pre 1.04; Post 0.95 **Number of violent or aggressive episodes (*)** ❑ Pre 1.19; Post 0.41 **Number of suicide or self-harm attempts** ❑ Pre 0.19; Post 0.12 **Mean number of changes in accommodation** ❑ Pre 0.32; Post 0.36 **Number unemployed** ❑ Pre 45; Post 49 **Number living with family** ❑ Pre 32; Post 33 **Number with improved relations with family** ❑ Pre 1; Post 29	Retrospective study. 74 patients were excluded due to non-availability of medical records, having a psychotic illness other than schizophrenia, medication details. Potential selection bias. Uncertain accuracy of some of the outcome measures. Aims of subgroup analysis not stated a priori. Reduced generalisability of results.

		Number with deteriorated relations with family ❑ Pre 32; Post 0 Outcomes marked (*) have p values < 0.05 Essentially the same pattern of changes seen in the oral medication and depot medication subgroups.	
Munetz et al (1996)	**Study aim:** Examined changes in the patients' patterns of service use in the year prior to and following assignment to CTO. **Jurisdiction:** Ohio, US. Least restrictive CTO **Sample:** The first 20 inpatients from state psychiatric unit given CTOs between January 1992 and November 1993 and who were maintained on the CTO for at least 12 months. SMI and history of non-compliance and recurrent hospitalizations, but good treatment response. **Method:** Analytic cross-sectional. Data drawn from local mental health databases. Outcome measures were for the 12 months before CTO and the 12 months during CTO.	❑ Significant reductions were found in visits to the psychiatric emergency service, hospital admissions, and lengths of stay. **<u>State Hospitals</u>** **Average number of admissions (*)** ❑ Pre CTO 1.5; During CTO 0.4 **Average number of bed days** ❑ Pre CTO 133.0; During CTO 44.3 **<u>General hospitals or crisis units</u>** **Average number of admissions** ❑ Pre CTO 0.3; During CTO 0.5 **Average number of bed days** ❑ Pre CTO 7.5; During CTO 6.2 **Average number of visits to psychiatric emergency services (*)** ❑ Pre CTO 2.4; During CTO 0.7 **Average number of psychiatric outpatient appointments (*)** ❑ Pre CTO 5.7; During CTO 13.0 **Average number of day treatment sessions** ❑ Pre CTO 22.5; During CTO 59.5 **Average number of case management contacts** ❑ Pre CTO 64.2; During CTO 82.5 Outcome measures marked (*) showed reductions with p values < 0.03 (two-tailed t test).	Retrospective study.
New York State Office of Mental Health (2005)	**Study aim:** To evaluate implementation of CTO. **Jurisdiction:** New York State. **Sample:** All 4,041 referrals resulting in CTOs between November 1999 and end	**<u>First 6 months</u>** **Participation in case management and other services** ❑ 89% increase in proportion receiving case management ❑ 47% increase medication management ❑ 47% increase in receipt of individual or group therapy	Retrospective study. High risk of reporting bias – eg - information often recorded or provided by

	December 2004. **Method:** Descriptive cross-sectional. Audit. OMH Central and Field Office staff record basic information on each court order in electronic tracking system; OMH collects additional information concerning CTO recipients from their case managers via a paper-based survey data collection process.	❑ 47% increase in use of day programmes ❑ 67% increase in use of substance abuse services ❑ 63% increase in use of housing support services ❑ 106% increase in urine or blood testing for adherence to medication ❑ 106% increase in urine or blood testing for substance abuse **Increased engagement in services and adherence to prescribed medication:** ❑ Engagement in services increased from 41% to 62% ❑ Medication adherence increased from 34% to 69% **Improved community and social functioning and reduction in harmful behaviours:** ❑ Reduction of from 39% to 33% of patients that had serious impairment in social, occupational or school functioning (based on Global Assessment of Functioning score (GAF)) ❑ 23% average reduction in difficulties with self-care and community living ❑ 22% average reduction in difficulties with social, interpersonal and family functioning ❑ 22% average percent reduction in difficulties with task performance ❑ 44% average percent reduction in incidence of harmful behaviours **<u>Beyond first 6 months</u>** **Incidence of hospitalization, homelessness, arrest and incarceration:** ❑ Incarceration reduced by 87% ❑ Arrests reduced by 83% ❑ Psychiatric hospitalization reduced by 77% ❑ Homelessness reduced by 74% **Days hospitalised for psychiatric care:** ❑ Decline in days hospitalized continued after end of court ordered treatment (50 days average prior to CTO, 22 days average during CTO, 13 days average post CTO)	case-managers. Accuracy of data uncertain. Some missing data at follow-up – potential for bias. Audit to support the successful implementation of CTO.
O'Brien and Farrell	**Study aim:** To obtain a profile of Canadian patients issued CTOs.	**Hospital admissions** ❑ Pre CTO - mean 1.96, range 1-4, 78% had 2 or more	Retrospective study. Little methodological detail on

(2005)	**Jurisdiction:** Ontario, Canada **Sample:** First 25 patients given CTOs at a specialty tertiary care psychiatric teaching hospital in Eastern Ontario. **Method:** Analytic cross-sectional. Data drawn from university information system. Measurements were for 12 months pre and 12 months post date CTO issued.	❑ Post CTO – mean 0.6, range 0-3, 56% had no admissions **Hospital days** ❑ Pre CTO – mean 130, SD 86 ❑ Post CTO – mean 22, SD 38 p values quoted as < 0.05 Authors also report significant increases in the range of support services and appropriate housing.	how data collected.
Ozgul and Brunero (1997)	**Study aims:** To determine the utilization and outcomes of CTOs. **Jurisdiction:** SW of Sydney, Australia. Least restrictive CTO. **Sample:** A random sample from the 74 patients with SMI placed on CTOs between Sept 1993 and June 1996. N = 46 (35 current CTOs). **Method:** Analytic cross-sectional. A structured database form recorded all patient information for the 12 months before and after being placed on a CTO. The nature of the treatment plan and the CTO objectives were recorded.	**Of the total sample (N=46)** ❑ 141 CTOs ❑ 1 on first order; 18 on second order; 1 on third order; 26 on fourth order ❑ 52% issued by magistrate; 58% issued by MHRT ❑ 90% of CTOs were renewed; 1% breached. **Total number of admissions** ❑ Pre CTO 62 admissions (6 voluntary and 56 involuntary); ❑ Post CTO 7 patients readmitted (13 admissions, 3 voluntary and 10 involuntary). **Average number of admissions** ❑ Pre CTO 1.51 (SD 0.75); Post CTO 1.86 (SD 1.07) **Average length of admission** ❑ Pre CTO 21.7 days (SD 16.33); Post CTO 12.5 days (SD 7.51) Significant reduction in number being readmitted to hospital ($p<0.05$). **Medication** ❑ Overall trend for neuroleptic medication dosage to be reduced while on CTO. ❑ Significant reduction in the average dosage of neuroleptic medication used from the first to the fourth order (N=26; $p<0.05$).	Retrospective data. Used existing records. Missing outcome data on 5 patients. Medication data on only 44 patients.
Power (unpublished)	**Study aim:** To assess the outcome of patients placed on a CTO. **Jurisdiction:** Victoria, Australia **Sample:** All patients residing in the Middle	**Number of admissions (per patient)** ❑ Pre CTO mean 1.76; CTO mean 0.57 **Total inpatient time per patient (weeks)** ❑ Pre CTO mean 11.5; CTO mean 0.57	Retrospective study.

	South Sector of Melbourne, Australia placed on a CTO between Oct 1st 1987 and July 31st 1991. N= 125. **Method:** Analytic cross-sectional. Data drawn from case files, Health Department, medical records and patient registers. Measurements were for the time spent on CTO and the equivalent time immediately before the CTO. A further measurement was made of 31 patients in a post CTO period (again equal to the time spent on CTO).	**Violence (Overt Aggression Scale 1-4)** ❑ Pre CTO mean 2.1; CTO mean 0.78 **Number of cases on depot medication** ❑ Pre CTO 61/125; CTO 107/125 **Compliance with outpatient attendance (rated from 1-6; never-fully compliant)** ❑ Pre CTO mean 2 (poor); CTO mean 4 (good) **Compliance with outpatient medication (rated from 1-6; never-fully compliant)** ❑ Pre CTO mean 2 (poor); CTO mean 4 (good) **Global symptom change** ❑ 70% improved in CTO period compared to the pre CTO period P < 0.001 for all changes. **<u>Post CTO outcomes</u>** **Outpatient medication compliance** ❑ CTO mean 4.36 ❑ Post CTO mean 3.50 (significant reduction p=0.008) **Violence (Overt Aggression Scale 1-4)** ❑ CTO mean 0.5 ❑ Post CTO mean 0.88 (non-significant increase p=0.067)	
Rohland et al (2000) Rohland (1998)	**Study aim:** To determine the long-term effect of CTO on service use. **Jurisdiction:** Iowa, USA Least restrictive CTO **Sample**: 81 selected patients with psychotic illness (affective and non-affective) given CTOs at any time between July 1st 1991 and June 30th 1996 from the University of Iowa Psychiatry Outpatient Clinic. **Method:** Analytic cross-sectional. Data drawn from university information system. Outcome measures were for the 12 months pre CTO and yearly during CTO.	**Average number of all service contacts (*)** ❑ Pre CTO 7.07; During CTO 12.73 **Average number of outpatient visits (*)** ❑ Pre CTO 4.99; During CTO 9.87 **Average number of emergency visits** ❑ Pre CTO 0.41; During CTO 0.20 **Average number of hospital admissions (*)** ❑ Pre CTO 1.25; During CTO 0.32 **Average number of hospital days per admission (*)** ❑ Pre CTO 26.68; During CTO 18.64 **Average number of hospital days per year (*)** ❑ Pre CTO 33.27; During CTO 4.56 Outcomes marked (*) show p values < 0.05 (two-tailed t-tests)	Retrospective study. Initial patient selection method unclear – possible bias. Aims of subgroup analysis not stated a priori.

		❑ Subgroup analysis of the 63 patients with CTO duration > 1year showed a very similar pattern of service use to the entire group of 81 patients **Subgroup analysis of the 25 patients with CTO duration > 5 years (average period 9.75 years, range 5 – 15.5 years):** **Average number of outpatient visits (*)** ❑ Pre CTO 4.1 ❑ Overall period on CTO 7.3 **Average number of emergency visits** ❑ Pre CTO 0.56 ❑ 1st year on CTO 2.02 ❑ Overall period on CTO 0.23 **Average number of hospital admissions (*)** ❑ Pre CTO 1.08 ❑ 1st year on CTO 1.00 ❑ Overall period on CTO 0.35 **Average number of hospital days per admission (*)** ❑ Pre CTO 32 ❑ Overall period on CTO 22.4 **Average number of hospital days per year (*)** ❑ Pre CTO 34.6 ❑ Overall period on CTO 7.4 Outcomes marked (*) show p values < 0.05 (two-tailed t-tests) ❑ Subgroup analysis of the 47 patients who had had their outpatient commitment terminated during the 5 year period showed a similar pattern of service use to the entire group of 81 patients.	
Zanni and deVeau (1986)	**Study aim:** To investigate the effect of CTOs on hospitalization rates before and after commitment. **Jurisdiction:** Washington DC, US CTO poorly specified. **Sample:** All 42 patients at St Elizabeth's Hospital in Washington DC whose legal	❑ 36 of the 42 patients (86%) had CTO duration for the full year of follow up (average 10.5 months). **Shortened inpatient stays:** ❑ Pre CTO average 55 days ❑ Post CTO average 38 days Difference not statistically significant.	Retrospective study. Details of data source not given. Potential selection bias. No contextual data re trends to help with interpretation. Data do not support authors'

	status changed from voluntary to CTO in the year 1983. Authors state the hospital has had experience of CTO from 1971. **Method:** Analytic cross-sectional. For each patient compared average inpatient length of stay, total number of inpatient hospitalizations, and inpatient days for the year before CTO initiated and the year after CTO initiated (for 86% of patients the CTO lasted the full year).	**Reduction in number of inpatient admissions:** ❑ Pre CTO average 1.81 ❑ Post CTO average 0.95 Statistically significant difference (p = <0.001).	interpretations.

4.2 Stakeholder perceptions of CTO

(a) Introduction

Some of the research reviewed in the previous section on how CTOs might work in practice suggested that the views of several stakeholder groups could influence the way CTOs are implemented. Eighteen studies (nine US, three Canadian, five New Zealand and one Australian) have specifically examined the perceptions of different stakeholder groups towards CTOs. All studies had slightly different aims, but common themes are presented in the text below. These studies have been summarized by stakeholder group, and specific comments on each study are provided in Tables 4.2 (i), (ii), (iii) and (iv).

Five studies (three qualitative and two cross-sectional) examined perceptions of CTOs from the perspectives of a variety of stakeholder groups. Two studies were undertaken in the US (Swartz et al, 2003; Scheid-Cook, 1993), one in New Zealand (Gibbs et al, 2004), one in Canada (Boudreau and Lambert, 1993) and one in Australia (Ozgul and Brunero, 1997). Each study is summarized in Table 4.2(i).

Five cross-sectional studies examined the perceptions of CTOs from the perspective of mental health professionals. Three studies were undertaken in New Zealand (Romans et al, 2004; Dawson and Romans, 2000; Currier et al, 1997) and two were undertaken in Canada (O'Reilly et al, 2000; Canadian Mental Health Association study, 2005). Study participants had both indirect and direct experience of using CTOs. Each study is summarized in Table 4.2(ii).

Six cross-sectional studies, several involving qualitative interviews, investigated patient perceptions of CTOs. One study (Gibbs et al, 2005) was undertaken in New Zealand and five were undertaken in the US. Four of the US studies came from North Carolina, one involving patients with schizophrenia recently involved in an observational study (Swartz et al, 2004) and three involving many of the same patients who had been enrolled in a larger randomized controlled trial (Borum et al, 1999; Hiday et al, 1999; and Swartz et al, 2003). The remaining US study was part of an audit in New York (New York State Office of Mental Health, 2005). The New Zealand study included patients who all had direct current or recent experience of a CTO. The New York study involved only patients with direct experience of a CTO, while the North Carolina studies included both patients who were about to receive CTO or had recently finished a CTO as well as outpatients who did not necessarily have any direct experience of CTO. All studies had slightly different aims. The exploratory nature of this qualitative research, coupled with the different study aims and clinical populations used have resulted in a complex array of findings. Each study is summarized in Table 4.2(iii).

Two cross-sectional studies (both from the US, one from Oregon and one from New York) addressed attitudes towards CTOs amongst family members of people with severe mental illness (McFarland et al, 1990; Lohrer et al, 2002). These studies are summarized Table 4.2(iv).

(b) Perceptions of CTOs and their implementation

Perceptions of different stakeholder groups towards CTOs and their implementation

In the North Carolina study (Swartz et al, 2003) the views of patients, family members, clinicians and the general public were compared. Subjects were presented with short vignettes and asked to put themselves in the position of the typical patient and rate the outcomes. All four groups had largely similar preferences with the highest preference being given to avoiding involuntary hospitalization, followed by avoiding interpersonal violence and maintaining good relations. In a second study from North Carolina, which examined CTOs from the perspective of clinicians and clients, Scheid-Cook found positive views of CTOs expressed by both groups. Patients preferred CTOs to being in hospital, although some dissatisfaction was expressed about being forced to take medication (Scheid-Cook, 1993). In Ontario, Canada, prior to the introduction of a new CTO, Boudreau and Lambert (1993) found no consistent positions within or between different stakeholder groups.

Mental health professionals' attitudes towards CTOs and their implementation

Although mental health professionals generally reported positive views about CTOs, potential problems with this form of compulsory treatment were also acknowledged.

In New Zealand, Romans et al (2004) found that around 80% of psychiatrists and other mental health professionals preferred to work in a system with CTO. All professional groups felt that CTOs were generally used appropriately and that the benefits outweighed any coercive impact on the patient. However, in a small qualitative study of psychiatrists views in New Zealand (Gibbs et al, 2004), although the majority felt that CTOs were often necessary and that balance was required between the patient's need for help and the need to foster independence and work towards discharge, several had strong reservations about the use of CTOs in general. Many expressed unhappiness about the lack of time available to spend with patients and the fact that their relationship was strongly influenced by the law and medication options. In another New Zealand study involving all psychiatric specialists, Currier et al (1997) found that only one fifth thought that the system emphasized best-interests over adherence to legal rights, and more than 70% believed that the policy resulted in inappropriate release of patients into the community. Over 40% of those with clinical experience outside New Zealand felt that the New Zealand law resulted in inferior patient care and more than 45% rated the effects as 'about the same'. In a third study involving 14% of New Zealand psychiatrists, Dawson and Romans (2000) found that clinicians generally believed that the benefits of CTOs outweighed any coercive impact on the patient, although differences between frequent and infrequent users in their perceptions of the importance of different aspects of CTOs were evident.

In Canada, O'Reilly et al (2000) found Saskatchewan psychiatrists were generally satisfied with the operation of CTOs, and almost one half expected their use of CTOs to increase. In Toronto, there was a common view amongst mental health professionals that CTOs were useful in promoting treatment. Around two thirds of all mental health professionals agreed that CTOs improve communication. Psychiatrists and other mental

health professionals expressed different views about the option to appeal to the consent and capacity board, with 72% psychiatrists believing this to be a negative aspect of CTOs, and 81% of other mental health professionals being uncertain (Canadian Mental Health Association, 2005).

Family members' attitudes towards CTOs and their implementation

Two studies involving family members suggested they viewed the idea of CTOs quite positively. However, while McFarland et al (1990) found that 63% of participants in Oregon were in favour of CTOs, only 7% felt CTO would have been useful at the time of their relative's last hospitalization: 50% cited the reason as dangerousness and 45% felt their relative was too sick at the time. Lack of outpatient care, fear of the mentally ill and inability to provide the care were also cited as factors mitigating against the use of CTO. In New Zealand, a small study of Maori patients and their extended family found that the perceptions of family members generally supported CTOs as a way of ensuring ongoing delivery of services that might otherwise be refused. Again, however, concerns were expressed about the use of medication, mental health professionals' strict adherence to confidentiality, and not being kept informed of decisions made, particularly those concerning discharge (Gibbs et al, 2004).

Patient attitudes towards CTOs and their implementation

Patients' attitudes towards CTOs tended to be mixed, although there is some evidence that they are influenced by a variety of factors. In a small qualitative study of Maori CTO recipients, Gibbs et al (2004) noted that even though the majority of patients articulated benefits, for many the CTO was associated with continuing medication and continuing ill-health. CTO recipients all saw limitations, including the side-effects of enforced medication, stigma, restrictions in their personal lives, lack of control, and not getting better. In the larger New Zealand study, Gibbs et al (2005) found that 65% of patients felt the CTO was generally or wholly favourable (only 7% were wholly opposed). 'Safety' and 'security' were regularly mentioned during qualitative interviews, with some patients feeling the CTO had saved their lives. However, for a number of patients the loss of freedom and stigma gave them a negative view of CTO, and qualitative research highlighted the coercive elements and loss of choice as perceived disadvantages. Many felt the psychiatrists wielded considerable power in the relationship, although views were expressed that the CTO made little difference to the therapeutic relationship. Indifference was a view of a substantial group of long-term CTO patients. In the Maori sub-sample of this study population, patients generally held positive views about key workers, whereas psychiatrists were nearly always viewed as authority figures focused on medication (Gibbs et al, 2004).

The New York State Office of Mental Health (2005) audit interviewed a small subgroup of 76 CTO patients, around 90% of whom reported having confidence in the ability of their case manager to help them, and who agreed with them about the goals. Although more than half reported feeling angry and embarrassed about being placed on a CTO, nearly two thirds felt that it had been a good thing for them. In North Carolina, Swartz et al (2004) found that outpatients with schizophrenia who had no direct connection to CTOs regarded their condition as a disorder with biological, psychological and social

components and tended to endorse CTOs as fair and effective. Those who rejected a view of themselves as ill and were more symptomatic tended to reject CTOs. Patients' perceptions of effectiveness of CTOs predicted their perceptions of fairness, and patients' views of their illness and the need for treatment influenced their endorsements of the fairness and effectiveness of CTOs. Nearly two thirds of all patients regarded CTOs as effective and more than half regarded them as being fair.

Does outcome/experience of CTO affect patient perceptions?
Patient views about this question appear to conflict. Borum et al (1999) found that patients' previous experience of CTOs did not predict perceptions of CTO requirements or CTO effectiveness. However, in the North Carolina study, Swartz et al (2003) found that only 28% of inpatients discharged to CTO ascribed personal benefit to CTO one year after being committed to a CTO. A positive appraisal of benefit was roughly twice as likely in subjects who actually experienced positive outcomes, although positive and negative attitudes to CTO at baseline and at 12 months were reasonably evenly distributed amongst those patients with a positive outcome on purely clinical criteria. Multivariate analyses suggested that a positive outcome only predicted a positive perception of CTOs in patients who had experienced a CTO for longer than 6 months.

(c) The value of CTOs for ensuring compliance and improving clinical outcomes
Patients' views on ensuring compliance/improving clinical outcomes
Borum et al (1999) found that, in North Carolina patients eligible for CTO, more than three quarters believed that people under a CTO were more likely to keep their appointments, take their medication and stay out of hospital. The New York State Office of Mental Health (2005) audit interviewed a small subgroup of 76 CTO patients. More than three quarters reported feeling that the CTO had helped them to get and stay well and gain control of their lives, and 90% felt they were more likely to keep their appointments and take medication as a result of the CTO. In a small study of Maori CTO patients in New Zealand (Gibbs et al, 2004) most patients reported that they did comply with the CTO, sometimes merely because of fear of the imposed consequences, but also because of fear of relapse and the influence of positive social factors.

Mental health professionals' views on ensuring compliance/improving clinical outcomes
In a study of psychiatric specialists in New Zealand, Currier et al (1997) found that two thirds believed that CTOs were a useful means of ensuring compliance in the community. However, 32% disagreed or strongly disagreed that clinical outcomes and patient care were improved through the use of CTOs.

Comparing stakeholder views on ensuring compliance/improving clinical outcomes
In their study on the perspectives of clients, carers, case-managers and mental health review tribunals in New South Wales, Australia, Ozgul and Brunero (1997) found that differences emerged between the views of different groups. Case managers and family members tended to rate significantly higher than patients the overall benefit of CTOs, their helpfulness in reducing family conflict, client distress, and hospital readmission. Case-managers, family members and patients similarly rated CTOs as being somewhat to moderately helpful in reducing family distress, facilitating regular medication, having

contact with the mental health worker and doctor, improving ability to work, thinking and concentration, and participation in social activities. MHRT members rated the general value of CTOs highly, although more than half appeared to acknowledge that they did little to reduce client distress.

(d) Factors affecting use of CTOs by mental health professionals

In a study of 14% of psychiatrists in New Zealand, Dawson and Romans (2000) found that four factors (reducing the consequences of illness, two types of service issues, and the authority to treat without consent) accounted for 65% of the variance between users of CTOs. In a second New Zealand study, Romans and others (2004) found the top five decision-making factors for psychiatrists deciding to use CTOs were to ensure contact with professional, provide the authority to treat, ensure rapid identification of relapse, promote compliance with medication, and to protect the patient from consequences of relapse.

In Toronto, the Canadian Mental Health Association study (2005) also addressed factors influencing decision-making around CTOs. This study found the top three factors prompting the use of CTOs were history of treatment non-compliance, history of frequent hospitalizations, and patient safety in the community. One factor that deterred use amongst all mental health professionals, including those with actual experience of using CTOs, was a lack of demonstrated efficacy. Those with direct experience of using CTOs also cited the time required to issue CTO and infringement on patients' rights as further reasons deterring them from using CTOs.

(e) Awareness of and familiarity with CTO criteria and processes

Mental health professionals' knowledge of CTOs

A study of Canadian psychiatrists in Saskatchewan (O'Reilly, 2000) reported that 37% of participants indicated that they had not received enough information on CTOs. In the Canadian Mental Health Association study (2005), mental health professionals cited lack of knowledge and/or expertise in their top three factors deterring use of CTO. However, in New Zealand, Currier (1997) found that most mental health professionals felt that they were adequately trained.

Family member and patient knowledge of CTOs

In Oregon, only 44% of family members were aware that CTO was an option in the state (McFarland et al, 1990). A study of New York adult siblings of people with mental illness (Lohrer et al, 2002) found that of 48% indicating familiarity with the law, 69% incorrectly thought that eligibility under the law was contingent on a history of violent behaviour, and 19% did not know that the law required filing a petition in court. Possessing higher education, reading about mental illness more often, planning to occupy future care giving roles, maintaining membership in a support group, and reporting that their sibling's difficulties with treatment compliance were all associated with familiarity with the law. In the Borum et al (1999) study of patients eligible to start CTO, over 80% of patients correctly believed the CTO required a patient to keep appointments and take medication as prescribed, although it is unclear whether they were aware that they could not be forced to comply with these requirements whilst still in the community.

(f) Discharge issues

Patients' views on discharge issues

In Otago, New Zealand, Gibbs and others (2005) study of the experiences of CTO patients suggested that discharge was considered to be an important indicator of success. Over time, however, some patients appeared to accept the constraints and value the 'sense of safety' provided by a CTO, and were very comfortable to remain on it.

Mental health professionals' views on discharge issues

In a study of New Zealand mental health professionals, Romans et al (2004) found that, for psychiatrists and other mental health professionals, the main reasons for CTO discharge were compliance with treatment, development of insight, clinical improvement, reduced risk to others, and reduced risk to self.

(g) Summary

It should be noted that the perceptions of stakeholders will necessarily be influenced by local context and CTO provisions and resourcing, and it might therefore be expected that these studies would yield quite different findings. Furthermore, it must be emphasised that the types of studies addressing stakeholder perceptions are necessarily exploratory, often providing detailed descriptions of the views of relatively small groups of individuals that, whilst informative, might not be generalisable to the wider population. Selection, recall, observer and reporting biases could feature in all these studies. Participants in this type of research are often a self-selected group and, in all cases, the methods used to collect data, the style of questioning, the degree of probing and the level of detail provided will have strongly influenced the information yielded and the conclusions that might be drawn. Selective reporting of findings and the emphasis given to some outcomes over others is also likely to colour any interpretation of the synthesis of this body of work.

There is surprising consistency between the some of the findings from different studies involving different groups. Whilst stakeholder perceptions of CTOs were still mixed, many were positive, and all stakeholder groups expressed both positive and negative views. There did appear to be differences between stakeholder groups on the value of different CTO outcomes, but avoiding involuntary hospitalization was a key priority for patients, family members, clinicians and the general public. In New Zealand, some patients even expressed ambivalence about discharge from CTOs.

Patient perceptions about CTOs were very mixed. For example, a number of patients in New York and New Zealand expressed positive views about some aspects CTOs, acknowledging that the CTO had improved their contact with services and helped them with their medication. Patients' views about the value of CTOs did not appear to be predicted by the outcome of the intervention, although there was some evidence that perceptions of the fairness and effectiveness of CTOs was influenced by patients' views about their illness and need for treatment. Nevertheless, any improvements in clinical outcomes and patient care experienced by patients tended not to be attributed to the CTO, with the exception of a highly selected group of patients with long–term experience of

CTOs. Furthermore, in both jurisdictions, positive attitudes were tempered by a wide range of concerns and negative perceptions.

Family members in the US and New Zealand, although generally in favour of CTOs, expressed concerns about the adequacy of support in the community and information provided to family members. It was also felt they might only be helpful for a relatively small proportion of patients, limiting their useful application.

The psychiatrists surveyed gave broad support to CTOs, although there were some caveats. Canadian psychiatrists generally viewed CTOs as being useful in promoting treatment and the majority believed they improved communication. In New Zealand, the majority of mental health professionals felt that the benefits of treatment outweighed any coercive effect on the patient, preferred to work in system with CTOs, and saw them as a means of reducing the consequences of relapse. This group also generally appeared to value the authority to treat patients provided by CTOs, contrasting with views of Canadian mental health professionals, who expressed concerns about the infringement of patients' rights, and cited a lack of demonstrated efficacy amongst factors that deter CTO use. Psychiatrists in New Zealand, however, did express other concerns about the problems associated with using CTOs, and only a small number believed that a system involving CTOs valued the best interests of the patient over legal obligations. Although these responses might be biased, it is perhaps noteworthy that factors reportedly determining CTO use tended not to relate to risk of violence, but rather to need for treatment and patient welfare. This finding was consistent across studies from New Zealand and Toronto and consistent between psychiatrists and other mental health professionals.

Table 4.2 – Stakeholder perceptions of CTO

(i) Mixed group perceptions of CTOs

Study	Aims and methods	Main findings
Swartz et al. (2003)	**Study aim:** To examine and compare the views of four stakeholder groups. **Jurisdiction:** Piedmont area, North Carolina, US **Sample:** Patients, family members, general public and clinicians. Subjects from the Piedmont area, North Carolina, USA who were members of the 4 stakeholder groups. Response rate – not stated for patients, family members, or general public. 85% for clinicians. Patients (N=104); Family members (N=83); General Public (N=59); Clinicians (N=83). **Method:** Qualitative study. Participants presented with short vignettes that depicted a typical patient with schizophrenia. Subjects were asked to put themselves in the position of the typical patient described and to rate on a scale of 0-10 how good or bad they thought the outcome was. Potential outcomes (essentially 1 good and 1 bad) that were associated alternatively with CTO, relationships with others, violence and rehospitalisation were presented. **Notes:** Patients with schizophrenia without insight may not be relating *themselves* to the vignettes used. The strength of the good/bad polarity is weaker on the two CTO outcomes in the vignettes than on the other outcomes in the vignettes. Both these considerations may affect study accuracy.	The four groups had largely similar preferences. With some exceptions, each group gave the highest preference to avoiding involuntary hospitalization, followed by avoiding interpersonal violence and maintaining good relationships. No group gave appreciable importance to CTO outcomes.
Gibbs et al. (2004)	**Study aim:** To consider the impact of CTOs on Maori patients and their whanau and the associated views of health professionals. **Jurisdiction:** New Zealand. **Sample:** A sub sample of 8 Maori patients (ethnic population disproportionately institutionalized) from	**Reasons for the CTO and its significance** Health professional consistently maintained that the main purpose for the CTO was to ensure ongoing delivery of mental health services to patients who would otherwise refuse them. Concerns about safety were prominent. Whanau members generally supported CTOs for similar reasons. Not all whanau members were enthusiastic about the use of medication.

	the Gibbs et al (2005). **Method:** Qualitative study. Patients interviewed and, where possible, members of their whanau (extended family). Associated interviews were held with their psychiatrists, key workers and other carers. Total of 29 interviews.	Most patients acknowledged the order was needed to assist them or had stopped them getting severely ill. One patient said 'I don't think it helped me. It helped the system…I always had it in the back of my mind that the control wasn't mine.' **Benefits and limitations of the CTO** Seven patients articulated definite benefits. One said 'it saved my life: it got me off the streets: it helped me communicate with people'. Even the most positive of patients saw significant limitations. Patients and whanau noted: the side effects of enforced medication; an enduring sense of stigma; restrictions on residence or movement; limited social and work opportunities; the feeling that others made key decisions about their lives; not getting better – merely existing. For many the CTO was inextricably linked with taking medication and continuing ill health. For one patient the whole order was a negative experience. **Compliance and discharge** Most patients said they did comply. For several patients it was fear of a return to hospital and forced medication which kept them compliant. Other reasons were a fear of relapse of illness, family pressure, to enjoy life outside of hospital and to gain greater stability. The factors favouring discharge throughout the interviews were: the passage of time since last admission to hospital (1-2 years); sustained compliance with medication; establishing a degree of insight; taking responsibility for medication; keeping appointments; forming positive relationships; adequate self care; living in adequate accommodation; getting a job; reduction of risk. All patients who were discharged were pleased to be discharged. Of the 4 patients still on the CTO at the time of interview 3 wished to be discharged, 1 did not. **The role and concerns of whanau** Where whanau members were involved they provided significant support. They did not always feel sufficiently consulted about key decisions, especially discharge. One said 'I have to get in touch with them most of the time. I would like them to keep me informed or updated.' There were concerns about strict adherence to confidentiality. Contact with the whanau was not always considered in the patient's best interest. **Mental health professionals and cultural issues** Key workers were generally considered positively by patients. Psychiatrists, on the other hand, were nearly always viewed by patients as authority

		figures. They were seen as representatives of 'the system' and as highly focused on medication. Psychiatrists lamented the lack of time they had to spend with patients and bemoaned the inevitability of the law and medication as the defining features of their relationship with patients. For mental health professionals, the vital matter was seen to be achieving the right balance between the patient's need for assistance and the need to foster the patient's independence with a view to discharge. Where the balance lay was debated. The majority felt the CTO was necessary in the cases discussed. One nurse was vehemently opposed to CTOs in all cases viewing them as 'a tool for punishment'. One psychiatrist had strong reservations about their use. The Maori accommodation workers noted the lack of interaction between them and mainstream mental health services.
Scheid-Cook (1993)	**Study aim:** To examine CTOs from the perspective of clinicians and clients. **Jurisdiction:** North Carolina, US. **Sample:** Clinicians and patients involved with CTOs primarily in the early years of CTO law. **Method:** Qualitative study. Field notes and interviews. The researcher, a sociologist, had been involved in several studies of CTOs in the state since 1984 and had ready access to mental health professionals and patient views and perceptions of CTOs. Analysis based on notes from 73 clinicians and 51 patients. **Notes:** Data collected for another purpose.	**Clinicians constructions of CTO** Where CTO was viewed as helpful, it was because of the greater social control it offered. 'In general a good thing because it gives some leverage…over a relatively refractory treatment population.' 'Another way to twist their arm'. Researcher writes: "No teeth – again and again I heard that complaint. Clinicians wistfully 'wished there were more teeth to enforce compliance'; they thought they could not work on medication compliance if a client failed to show up, and there was really no way to make them show up. A nurse who worked exclusively with [CTO] clients felt she was 'bluffing' during the supplemental hearing; 'the court will intimidate some, but not all' the clients." The majority of clinicians actively supported the medical model of treatment, and some used CTO reimbursements to pay for medication. For almost all clinicians, medication was the 'bottom-line' of treatment for CTO patients. One excerpt refers to patient liberty: 'Although the patient has commitment hearing, I elected not to commit him to [CTO] because throughout his stay he had recognized that his medication did help him and most of the time he was responsible in trying to get himself symptom free. I preferred to give him the dignity of treating his illness himself.' **Patient constructions of CTO** Patients had two common reactions to CTO; either they did not know what it was and / or they thought it 'was better than being in the hospital'. '[CTO] is good because I do not have to be in the hospital as long as I would need to be. It's better to be with

		family and friends.' Not all patients like CTO. Some expressed boredom and dissatisfaction. Some saw CTO as an infringement on their liberty. Many patients did not like being 'forced to take their medication'.
Boudreau and Lambert (1993)	**Study aims:** To examine and contrast the positions expressed by Ontario interest groups. **Jurisdiction:** Ontario, Canada **Sample:** 224 submissions at 8 public consultation meetings across Ontario. **Method:** Cross-sectional study. Analysis of written and oral submissions from eight public consultation meetings on the position and key arguments of Ontario stakeholders on CTOs, examining polarization and consensus. **Notes:** Self-selected groups, therefore may not be representative. Bound by the wording of the consultation (main question required absolute yes/no answer, some were like recommendations, others very general or imprecise).	Slightly less than a quarter were clearly in favour of CTOs, and the majority of those referred to community commitment without prior hospitalization, especially as a form of prevention. Although little clarity about type of CTO meant by respondents, 70% referred to 'preventative commitment'. Off all respondents: - 23% unequivocally supported CTOs - 54% were against - 23% were unwilling/unable to take a firm decision Consumers and their advocates most uniformly oppose the legislation.
Ozgul and Brunero (1997)	**Study aims:** To determine the utilization and outcomes of CTOs from the perspective of client, carer, case manager and MHRT member. **Jurisdiction:** SW of Sydney, Australia. **Sample:** A random sample from the 74 patients with SMI placed on CTOs between Sept 1993 and June 1996. N = 46 (35 current CTOs). Case managers of the 46 patients (N=14); MHRT (N=14). **Method:** Cross-sectional study. Questionnaires designed to rate the usefulness of CTOs in helping people with SMI and their family/carer deal better with the illness. Patients, carers, case-mangers and members of the MHRT. A structured database form recorded all patient information for the 12 months before and after being placed on a CTO. The nature of the treatment plan and the CTO objectives were recorded. **Notes:** Community care information acquired retrospectively from existing documentation and health	Questionnaire results: Patients (on average) rated CTOs as being little to somewhat helpful in: - improving their ability to cope with the illness and in reducing: - family conflict - client distress - and hospital readmission. Case-managers and family members rated CTOs as being somewhat to very helpful in improving the ability of family members to cope. Case-managers, family members and patients rated CTOs as being somewhat to moderately helpful in: - reducing family distress - having regular medication - having contact with the mental health worker and doctor - improving ability to work - thinking and concentration

	records. Incentives used to self-reported information. Questionnaire response rates: Clients – active CTOs 16/35; Carers – 10/19; Case managers of 37/46.	- participation in social activities Case managers and family members tended to rate significantly higher than patients: - the overall benefit of CTOs ($p<0.05$) - their helpfulness in reducing family conflict ($p<0.05$) - client distress ($p<0.05$) - hospital readmission ($p<0.05$) CTOs were regarded as being of little to moderate help in improving participation in leisure activities and reducing symptoms of illness. CTOs were regarded as being of little to no helping in improving participation in rehabilitation activities. MHRT members: Rated management plans (77%) and objectives of CTOs (93%) as consistent with 'good' mental health care. Rated CTOs as very helpful in medication compliance (100%), preventing hospital readmission (93%), improving mental health status (92%), quality of life (86%), clients' coping ability (79%), access to mental health care (93%), regular monitoring and review of care (93%), and reducing client distress (57%) and family distress (100%).

(ii) Mental health professionals' perceptions of CTOs

Study	Aims and methods	Main findings
Romans et al (2004)	**Study aim:** To determine psychiatrists' perceptions of the requirements of the CTO and its effectiveness in improving medication compliance and community tenure. **Jurisdiction:** New Zealand wide. **Sample:** All psychiatrists in New Zealand and all community-based publicly employed nurses, social workers and occupational therapists in the province of Otago. Response rate 57%. N = 284. **Method:** Cross-sectional survey. The survey was performed in 2002 10 years after the introduction of CTO law in New Zealand. Questions on characteristics of the respondent, importance of certain matters in practice, with CTOs and respondents' level of agreement with certain statements about CTOs. **Notes:** Poor response rate.	Both psychiatrists and other mental health professionals indicated a high level of agreement with the statements that 1) CTOs are generally used appropriately and 2) when used appropriately their benefits are sufficient to outweigh any coercive impact on the patient. 78.8% of psychiatrists and 84.8% of other mental health professionals said they prefer to work in a system with CTOs. 76% of British trained psychiatrists (n=42) said they preferred to work in a system with CTOs. The top 5 decision-making factors for psychiatrists to use CTOs were: 1) ensure contact with professional, 2) provide the authority to treat, 3) rapid identification of relapse, 4) promote compliance with medication, 5) protect patient from consequences of relapse. A similar ordering was found for other mental health professionals. The top 5 reasons for discharge from a CTO were for psychiatrists: 1) compliance with treatment, 2) development of insight, 3) clinical improvement, 4) reduced risk to others, 5) reduced risk to self. A similar ordering was found for other mental health professionals
O'Reilly et al (2000)	**Study aims:** To determine the patterns of use and satisfaction with CTOs by psychiatrists. **Jurisdiction**: Saskatchewan, Canada. **Sample**: All registered psychiatrists in Saskatchewan, Canada. Response rate 72% N = 50 **Method:** Cross-sectional survey. Mail survey conducted in July 1998. **Notes:** Few details about questionnaire used.	The 50 respondents were treating a total of 14 patients on CTOs at the time of the survey. One psychiatrist was treating 4 of these 14 patients. Psychiatrists were generally satisfied with the operation of CTOs, though many felt that commitment of only 3 months before mandatory renewal was too short. The longest period for which a patient was the subject of a CTO was 24 months. Only 6 psychiatrists reported having kept any patient on a CTO for longer than a year. Almost one-half expected their use of CTOs to increase. 37% indicated that they had not received enough information on CTOs.

The Centre for Addiction and Mental Health and the Canadian Mental Health Association. (2005).	**Study aim**: To examine the perceptions of clinicians served by the CTO project. **Jurisdiction:** Toronto, Ontario, Canada. **Sample**: Mental health professionals. 30% of data was from psychiatrists. The 70% non-medical mental health professionals (MHPs). N=70. **Method:** Cross-sectional survey. In Autumn 2003 a questionnaire purporting to examine the perceptions that clinicians have of CTO was sent to all hospitals in Toronto, Ontario that have access to CTOs. The questionnaire was designed to probe: - the experiences clinicians have had working on the CTO initiative - their experience of utilizing CTOs - their reasons for why CTOs are used and not used. The questionnaire included open-ended responses on aspects of CTO. **Notes:** Little detail of the structure and content of the questionnaire. General details of methodology unclear.	The use of CTOs ranged from 89% to 37% across quadrants of Toronto. **Top 3 factors prompting use of CTO** These were the same for psychiatrists, MHPs and for the subgroup of respondents who had actual experience of using CTOs. They were: - History of treatment non-compliance - History of frequent hospitalizations - Patient's safety in the community **Top 3 factors that deter use of CTOs** Psychiatrists: - Lack of demonstrated efficacy - Workload associated with the consent and capacity board - Potential impact on therapeutic rapport MHPs: - Infringement on client rights - Lack of demonstrated efficacy - Lack of knowledge and/or expertise Subgroup of respondents who had actual experience of using CTOs - Lack of demonstrated efficacy - Time required to issue CTO - Infringement of client's rights. **The top 3 endorsed statements regarding CTO** Psychiatrists: - The appeal to the consent and capacity board is a negative aspect of CTOs (72% endorsed this) - CTOs increase communication (65% endorsed this) - CTOs don't increase hospital stays (61% endorsed this) MHPs: - Don't know whether the appeal to the consent and capacity board is a negative or positive aspect of CTO (81%) - CTO is an effective tool (80%) - Decreases hospitalization (78%) - CTO increases communication (65%) Subgroup of respondents who had actual experience of using CTO: - CTO helps patients access case management services (71%) - CTO is an effective tool (70%)

		Most useful aspects of CTOs Issues relating to treatment (e.g. "improve compliance with medication and treatment", "appears to support community-based treatment") were regarded as the most useful aspects of CTO by most professionals. **Least useful aspects of CTO** Researchers regarded the most commonly occurring issues which came up as: - Difficulty enforcing CTO (e.g. "no teeth") - CTO process (e.g. length of time to implement, paperwork, consent and capacity board hearings) - Community support (e.g. lack of case management) - Patient understanding (e.g. "not helpful with patients with no insight") - Client rights (e.g. infringement on civil liberties) - Confusion regarding the use of a CTO
Dawson and Romans (2000)	**Study aim:** To obtain the views of psychiatrists on the use of CTOs. **Jurisdiction:** New Zealand. **Sample:** 14% of qualified psychiatrists in NZ (42 qualified psychiatrists; 10 registrars; 1 MO of Special Scale in psychiatry; 2 missing). 29 North Island, 21 South Island, 2 outside. September 1999. CTO involvement - 12 very often, 19 quite often, 9 sometimes, 10 occasionally, 4 never. Response rate 79.7%. N = 55. **Method:** Cross-sectional survey. Survey conducted at annual meeting of NZ branch of the Royal Australian and New Zealand College of Psychiatrists. Asked whether agreed with statement 'when CTOs are used appropriately, their benefits are sufficient to outweigh any coercive impact on the patient'; and to rate 13 indicators for use on a 5 point scale. **Notes:** Convenience sample – possible selection bias. Some incomplete data. Possible reporting bias. Reported findings from exploratory analyses.	Benefits of CTOs outweigh any coercive impact on patient – Mean score = 1.9 (range 1-4), SD 0.8). **Frequency of CTO use:** ❑ Frequent users (very often/often) – rated authority to treat without patient's consent as more important than infrequent users (sometimes/occasionally/never) (p=0.03). ❑ Frequent users – rated ability to facilitate readmission to hospital as less important than infrequent users (p=0.05). **Four factors (derived from 13 indicators) accounted for 65% variance:** ❑ Reducing consequences of illness (protect patients from consequence, reduce violence and reduce self-harm) ❑ Service issues 1 (facilitate readmission, ensure police assistance, deflect liability, reduce substance abuse) ❑ Service issues 2 (rapid identification of relapse, ensure contact with patient, enhancing provider obligations) ❑ Authority to treat without consent ensuring contact and providing greater security for family and caregivers.

Currier (1997)	**Study aims:** Examines the clinical experiences of psychiatrists with the Mental Health (and Compulsory Treatment) Act of 1992. **Jurisdiction:** New Zealand. **Sample:** All psychiatric specialists registered with the Medical Council residing in New Zealand. N = 232. Response rate 57.3%, N = 133. Useable data for 49.6%, N = 115. **Method:** Cross-sectional survey. Mail survey examining the extent of practitioners' use of the MHA, perceived strengths and weaknesses of the MHA, and experiences with the family court system.	❑ 65.7% agree/strongly agreed that CTOs are a useful means of ensuring compliance in the community. Only 14.8% strongly disagreed with this statement. ❑ Of those who had mainly inpatient clinical duties (more than 2/3). 68.4% agreed/ strongly agreed that clinical outcomes and patient care are improved through use of CTOs (31.6% strongly disagreed/disagreed with this statement). Overall, 69.2% agreed with this statement. ❑ Most (77.8%) felt well-trained to use the Act. Only 9.8% strongly disagreed that they had received adequate training. ❑ 81.5% agreed that individual judges were consistent in their interpretation of this Act and that could predict the outcome of a hearing according to the judge presiding. ❑ Only 25.5% indicated that the outcomes of hearings do not vary according to which judge is presiding. ❑ 55.6% agreed that the Act was in need of a major revision. Of those responding to the open-ended question, 29% cited the need for improved clarity in dealing with specific clinical situations: intellectual handicap, personality disorder, sex offenders and juveniles, 29% cited lack of clarity in operational definitions. Less than 10% suggested problems with enforcement, change to client relationship, and exclusion of family wishes from the decision-making process. ❑ Only 19.4% agreed that the system emphasized clinical best-interest over strict adherence to legal rights. ❑ 70.9% agreed that the Act results in inappropriate release of patients into the community. ❑ Of those with clinical experience outside NZ, 41.3% felt that NZ law resulted in inferior patient care, 45.2% rated effects of care 'about the same', and 13.7% indicated that the Act resulted in superior patient care.

(iii) Patients perceptions of CTOs

Study	Aims and methods	Main findings
Borum et al (1999)	**Study aim:** To determine patients' perceptions of the requirements of the CTO and its effectiveness in improving medication compliance and community tenure. **Jurisdiction:** North Carolina, USA. **Sample:** All patients with a psychotic illness eligible for enrolment into the RCT. 92% response rate. N = 306. **Method:** Cross-sectional involving interviews. Data taken from interviews conducted as part of the North Carolina RCT of CTO effectiveness (1992-1996). **Notes**: Little detail of interview technique used.	88.6% believed that outpatient commitment requires an individual to keep appointments. 82.7% believed the CTO required an individual to take medication as prescribed. Previous experience of CTO did not predict these perceptions of CTO requirements. 82% believed that when people are under CTO they are more likely to keep their appointments. 77% thought that people under CTO are more likely to stay out of the hospital. 83% thought people on CTO were more likely to take their medication. Previous experience of CTO did not predicted beliefs about the effectiveness of CTO.
Swartz et al. (2003)	**Study aim:** To assess whether individuals experiencing CTO attribute benefit to the intervention. **Jurisdiction:** North Carolina, US. **Sample:** Sample of all psychotic patients who were eligible for that study and who were randomized to CTO. Response rate 85%. N= 123. **Method:** Cross-sectional involving interviews. Data taken from the North Carolina RCT of CTO effectiveness (1992-1996). Structured interviews were conducted with each patient and with an informant who knew the patient well. Information also gathered from records and case manager. An attitudinal typology was constructed from data about whether the patient generally endorsed the belief that CTO helps people adhere to prescribed psychiatric treatment and whether the person acknowledged a personal need for continuing treatment in the future. Multiple other demographic and recognized clinical measures also collected. **Notes:** Psychotic patients only.	27.6% of patients ascribed personal benefit to CTO 1 year after being committed to a CTO. Of the 81 patients who had a negative outcome on CTO judged by clinical measures: 49.9% had a negative attitude to CTO at both baseline and after 12 months. 29.6% had a positive attitude to CTO at baseline but a negative attitude to CTO after 12 months. 13.6% had a positive attitude to CTO at both baseline and after 12 months. 7.4% had a negative attitude to CTO at baseline and a baseline and a positive attitude at 12 months. Among the patients who perceived a high degree of coercion under CTO: A poor outcome was associated with a 16.7% rate of positive attitude to the CTO A good outcome was associated with a 53% rate of personal endorsement of the CTO. Of the 38 patients who had a positive outcome on CTO judged by clinical measures: 31.6% had a positive attitude to CTO at baseline and a negative attitude at 12 months. 26.3% had a positive attitude to CTO at both baseline and after 12 months.

		23.7% had a negative attitude to CTO as baseline and a negative attitude at 12 months. 18.4% had a negative attitude to CTO at baseline and a positive attitude at 12 months. <u>Multivariate analysis.</u> The likelihood of positive endorsement of benefit was significantly higher among subjects who experienced positive outcomes vs. negative outcomes ($p < 0.01$ two tailed). Using a model with negative outcome with a CTO duration less than 6 months as the comparison group: A positive outcome with a CTO of less than 6 months duration did not significantly increase the odds of a positive attitude to CTO (OR 2.81; 95% CI 0.70 – 11.24) A positive outcome with a CTO of more than 6 months duration significantly increased the odds of a positive attitude to CTO (OR 3.91; 95% CI 1.07-14.36)) A negative outcome with a CTO of greater than 6 months did not significantly increase the odds of a positive attitude or a negative attitude to CTO (OR 1.87; 95% CI 0.56-6.17)
Swartz et al (2004)	**Study aim:** MH consumers' appraisals of the fairness and effectiveness of CTO. **Jurisdiction:** Piedmont area of North Carolina, US. **Sample:** Patients with schizophrenia who had recently completed an observational study under usual care conditions. These patients had been randomly selected from regional public mental health clinics. N=104. **Method:** Cross-sectional involving interviews. Interviews between 2001 and 2002. Views on the effectiveness and fairness of all forms of mandated community treatment including CTOs were sought. Multiple measures including Insight into illness (ITAQ), model of mental illness held by patient, and MacArthur Admission Experience scale, outpatient version were also used. **Notes:** Response rate not stated	62% regarded mandates as effective. 55% regarded them as fair. Perceptions of the effectiveness and fairness of mandates were highly correlated. <u>Multivariate analysis.</u> Patients who regarded schizophrenia as a biopsychosocial disorder and who viewed themselves as ill and in need of treatment also tended to endorse the fairness and effectiveness of mandates. Those who rejected mandates as ineffective and unfair were more symptomatic and rejected a view of themselves as being ill.

Gibbs et. al (2005)	**Study aim:** Explores experiences of 42 CTO patients. **Jurisdiction:** Otago, New Zealand. **Sample:** All patients from Otago New Zealand who had been on a CTO for at least 6 months during 2001/2 were approached. N=42 **Method:** Qualitative study. Interviews focused on patient understandings of CTO; its impact on relationships, health and well being; its benefits and limitations; compliance with treatment and indicator for discharge. Interviews were taped and transcribed and a thematic analysis was performed. 2 independent researchers reviewed each transcript as a whole and scored the patients' global attitude to the CTO.	**Patients' overall assessment of the CTO** • Wholly favourable (19%) • Generally favourable but noted disadvantages (46%) • Equally for and against (21%) • Generally opposed but noted disadvantages (7%) • Totally opposed (7%) **Advantages for patients** Some patients said the CTO had 'saved their lives'. 'Safety' and 'security' were mentioned many times. Some patients said the CTOs ensured they got the services they needed. 'If you need a hospital bed you are more likely to get one straight away'. Compared with long-term hospitalization, imprisonment or homelessness CTOs were considered by virtually all patients to be less restrictive. 'It's better to be in the community than in hospital, there's much more freedom.' Anna, in her late 20s, with a diagnosis of schizophrenia, felt the order had got her 'well enough to sort or make my own decisions'. **Disadvantages for patients** Many patients felt they had 'to do what I am told' by mental health professionals e.g. medications even if they considered it harmful. Loretta a 50 year old European mother of 3 living in her own home and who had been hospitalized regularly over a long period of time said 'I have no choice so therefore I am not just an autonomous individual, I am answerable to people for my mental health'. For a number of people the pain of stigma and other's negative perceptions gave them a negative view of the CTO. A man with schizophrenia said it was a 'category hole' and a 'little box'. **Neutral comments** There were a substantial group of patients, many long-term CTO patients, who considered CTO made little or no difference to their lives. 'It's just out there in the distance'. 'Just a piece of paper'.

		Impact on relationships A few felt the CTO reassured their relatives and enhanced their sense of safety and security. Many patients viewed mental health professional, especially psychiatrists, as controlling and wielding considerable power. Many said it made no difference to their therapeutic relationships. **The dilemma of discharge** Discharge was viewed as an important indicator of 'success' and a 'stepping stone' to full independence. Comments included 'a CTO imposes rules; to get off it you have to show you are capable of being adult about medication and not being suicidal'. One patient however felt 'if it's not broken then why fix it' and thought he would not be discharged because he had been so stable on the CTO. A high risk sexual offender who had been on a CTO for 2.5 years said 'I don't understand why I am still on it. Why do I have to stay on it so long?' Over time, some patients had become volunteers for compulsion. They accepted the constraints and valued the sense of safety. Others, however, were extremely pleased to be discharged.
New York State Office of Mental Health (2005)	**Study aim:** Unclear. Audit data collected as part of a comparative study (due to report 2006). **Jurisdiction:** US, New York City. **Sample:** 76 patients receiving CTO in NY City (Bronx and Queens). **Method:** Cross-sectional involving surveys. Face to face interviews by researchers at NY State Psychiatric Institute/Columbia University, assessing recipients' recent service histories, opinions about CTO, strength of the working alliance between recipient and CTO case manager, and other factors including perceived coercion and stigma, perceived efficacy of services, and quality of life. **Notes:** Audit to support the successful implementation of CTO. Unclear how patients were selected – potential selection bias. High risk of reporting bias - acquiescence. Unclear at what point in CTO career data was collected.	Of recipients: ❑ 54% reported feeling angry ❑ 53% reported feeling embarrassed ❑ 62% reported that all things considered, being on a CTO had been a good thing for them ❑ 87% were confident in case manager's ability to help them ❑ 90% agreed with their case managers on what was important for them to work on. Pressures/methods used to keep them in treatment had helped ❑ 81% to get and stay well ❑ 75% to gain control over their lives ❑ 90% to be more likely to keep their appointments and take medication.

Hiday et al (1999)	**Study aim:** To better understand criminal victimization of patients ordered to a CTO. **Jurisdiction:** North Carolina, US **Sample:** Involuntary admitted psychiatric inpatients with SMI from a state mental hospital and 3 general hospitals, between November 1992 and March 1996, ordered to CTO after discharge. Participants in RCT. N= 331. **Method:** Cross-sectional involving interviews. Extensive interviews on patients actual and perceived vulnerability to victimization. Also used RCT baseline data and medical records.	Patients perceived vulnerability to crime.

(iv) Family members' perceptions of CTO

Study	Aims and methods	Main findings
McFarland et al. (1990)	**Study aim:** To examine the experiences and opinions of family members. **Jurisdiction:** Oregon, US. **Sample:** Family members. Response rate 54%. N = 260. **Method:** Cross-sectional survey of family members' opinions. In 1986 a questionnaire was distributed to selected relatives of people with mental illness at a community mental health centre in Oregon USA and through the Oregon Alliance of Advocates for the Mentally Ill. Multi-choice or checklist questions on involuntary treatment some of which pertained to CTOs.	44% were aware that CTO was an option in Oregon. 63% were in favour of CTOs. 7% felt that CTOs would have been useful during their relative's last hospitalization. 50% felt their relative would have been too dangerous and 45% felt their relative would have been too sick at that time. Family members also specified lack of outpatient care (35%), fear of the mentally ill relative (29%), and inability to provide the care (17%) as factors mitigating against CTO at the time of last hospitalization.
Lohrer et al. (2002)	**Study aim:** To examine the knowledge of CTOs among siblings. **Jurisdiction:** New York, US. **Sample:** Adult siblings of persons with mental illness. 80% of respondents had a sibling with schizophrenia. None of the respondents had a disability. Response rate not stated. N=100. **Method:** Cross-sectional survey of adult siblings of persons with mental disorder, between April 2000 and August 2001. Questionnaire testing knowledge of New York's CTO law ("Kendra's Law") using a true/false format Subjects recruited from mental health newsletters, conferences and random mailing to member households of the National Alliance for the Mentally Ill in New York.	48% indicated familiarity with CTO Law. Possessing higher education, reading about mental illness more often, planning to occupy future care giving roles, maintaining membership in a support group and reporting that their sibling's difficulties with treatment compliance were all associated with familiarity with the law. Of the 48% indicating familiarity 68.8% incorrectly reported that eligibility under the law was contingent on a history of violent behaviour and 18.8% did not know that the law required filing a petition in court.

4.3 Characteristics of patients on CTOs

(a) Introduction

Fourteen cross-sectional reports relating to 13 studies (six US, four Australian, two from Israel, and one from New Zealand) provided information on the characteristics of CTO recipients. Twelve papers reported demographic and clinical information about recipients of CTOs over a given time period. Six papers relating to five studies (three US and two Australian) compared the characteristics of CTO recipients with those of other groups.

Once again, the nature of all cross-sectional studies limits the value of any formal methodological scoring, although specific methodological comments on each study are listed in Table 4.3(i), a brief discussion of the problems associated these studies is provided at the end of the section, and a general discussion of the problems associated with cross-sectional studies is provided in Appendix I. To summarise, no study in this group was prospective, many involved small numbers of highly selected individuals, most used existing data collected for other purposes, in all studies data on all variables were recorded simultaneously and, in many cases, the methods used were poorly described. Information describing the socio-demographic and clinical characteristics of CTO recipients is summarized below.

(b) Socio-demographic characteristics of CTO recipients

Where mean ages of patients have been reported, they are quite similar across different jurisdictions. Mean ages ranged between 36 and 41.3 years, with standard deviations (where available) of between 10.7 and 14.9 years. Nevertheless, reported ages ranged from 13 to 99 years. Males outnumbered females in all studies, with the mean percentage of males across studies being 62% (range 53.8 – 71.8%). In those studies that reported the marital status of CTO recipients, the majority group in every sample was recorded as 'single' (range 31.4 - 80%). Only between 8% and 23.9% had a current partner or spouse.

Ethnicity

Ethnicity data is available from Israel, New Zealand, the United States and Australia. The studies presented here report the ethnicity of patients on CTO as raw percentages. Where possible, for comparative purposes, we have identified figures on the proportion of the general population in that particular region comprised by the relevant ethnic group.

In Israel, while census data from 1995 suggested that 24.8% of Jerusalem's population were Muslim (source: http://en.wikipedia.org/wiki/Demographics_of_Jerusalem), Bar El et al (1998) reported that in Jerusalem, only 2% of CTO patients were Muslim. In a second study from Israel, Durst et al (1999) reported that 44.6% of their CTO recipients were born outside Israel.

New Zealand census data for 2001 suggested that approximately 6% of the Otago population were Maori, although Dawson and Romans (2004) reported that 14.3% of CTO patients in Otago were Maori.
(Source: http://www.stats.govt.nz/products-and-services/Articles/census-snpsht-maori-Apr02.htm).

Current US Census Bureau data recorded 21.6% of the North Carolina population as being Black or African American. Hiday et al (1999) reported that 66.2% of CTO recipients in North Carolina were African American. Also in North Carolina, Scheid-Cook (1987) reported that 59.2% of the CTO population were Black. In New York, current US Census Bureau data recorded 15.9% of the population as being Black or African American, and 15.1% as being Hispanic. The New York State Office of Mental Health (2005) audit reported that 42% of CTO recipients were recorded as Black (non-Hispanic) and 21% Hispanic. However, although the sample size was small, the study from Nebraska by Wood and Swanson (1985) reported that the majority of CTO recipients (78%) were white.
(Sources: http://quickfacts.census.gov/qfd/states/37000.html;
http://quickfacts.census.gov/qfd/states/36000.html).

Recent census data records 3.2% of Western Australia's population as being Aboriginal. In Australia, Ozgul and Brunero (1997) and Power (unpublished) reported that, respectively, 67% of CTO recipients in the South West of Sydney and 66% of CTO recipients in Victoria were Australian-born. In Western Australia, Xiao et al (2004) reported that 6.8% of CTO patients were Aboriginal.
(Source: Government of Western Australia. Department of Indigenous Affairs.
http://www.dia.wa.gov.au/Policies/Communities/Files/ConsultingCitizensB&W.pdf)

These comparisons indicate that relative to the proportion of the general population comprised by their ethnic group, most ethnic minority groups might be over-represented amongst CTO recipients. The exception might be Muslim CTO recipients in Jerusalem (a religious minority group in this city) who could be *under-represented.* However, it must be emphasized that these comparison figures relate to the total population in that jurisdiction, rather than to the proportion of the population with a serious mental disorder, or, indeed, to the proportion of the overall population compulsorily detained under mental health legislation. Furthermore, the differing definitions of ethnic minority status across the study sites (such as religion in Israel, Black or Hispanic origins in US, and Aborigine status in New Zealand and Australia) make it difficult to draw meaningful conclusions about CTOs and ethnicity. Indeed, 'ethnicity' itself, irrespective of how assigned, may be a proxy for other confounders including socio-economic deprivation, culturally-determined explanatory models of illness, support networks, prevalence of mental disorders, biases in assessment of risk and dangerousness, and so on, all of which influence the application of CTOs. To date, the available research does not allow generalisable conclusions to be drawn about the interaction between minority status and CTO use across different countries.

Full details of the socio-demographic characteristics of CTO recipients are presented in Table 4.3(ii).

(c) Clinical characteristics of CTO recipients

Clinical diagnoses and features

Schizophrenia and other psychotic disorders consistently comprised the largest single group of disorders of CTO patients across all jurisdictions, ranging from 34.8% to 93%. Four studies reported data on affective illness (Hiday et al (1999) and Rohland (1998) from the USA; Power (unpublished) from Australia; and Dawson and Romans (2000) from New Zealand) as being 31.1%, 30%, 10% and 25.9% respectively. Personality disorder shows greater variation across studies, with 24.5% of patients in the Western Australian study reported as having a personality disorder (Xiao et al, 2004), but only 0.8% in the New Zealand study (Dawson and Romans, 2000). There is also considerable variation in the rates of substance abuse amongst CTO recipients, with 17.2% of CTO patients in Iowa USA (Rohland, 1998) but no patients in New Zealand recorded as substance abusers (Dawson and Romans, 2000), although 1.5% were recorded as suffering from alcoholic psychosis. Studies from New Zealand (Dawson and Romans, 2000) and Israel (Bar El et al, 1998; Durst et al, 1999) reported delusions in over 50% of all CTO patients with aggression reported in between 27.8 and 60% of patients. One study in Victoria, Australia, reported mean illness duration of 11.4 years (Power, unpublished).

Previous hospitalizations

The eligibility criteria for CTOs often stipulate that the patient has been previously treated in hospital, so it is unsurprising that most studies report a high prevalence of previous hospitalizations in CTO patients. Studies from Australia, the US and Israel provided information about previous admissions. Power (unpublished) in Australia and Bar El et al (1998) in Israel both reported that nearly 90% of CTO recipients had histories of previous hospitalizations. Both Power (unpublished) and Durst et al (1999) (another Israeli study) reported the vast majority of these as having been involuntary. Power (unpublished) reported the mean number of previous hospitalizations as 7, with a range of 1-41. Bar El et al (1998) found that 61% of patients had histories of five or more previous hospitalizations. The New York State Office of Mental Health (2005) audit reported that 97% of CTO recipients had a history of being hospitalized at least once. In North Carolina, Hiday et al (1999) reported an average of 1.5 hospitalisations in the previous year.

Forensic history and violence

In New Zealand, Dawson and Romans (2000) reported that only 13.1% of CTO recipients had previously been charged with a crime. In Western Australia, Xiao et al (2004) reported that 44.5% of CTO patients had no criminal offence history at all, and 88.7% had no criminal offence history in the 12 months prior to the CTO. However, in New York, 30% of CTO recipients had been arrested at least once in the last 36 months (New York State Office of Mental Health, 2005), while in the two Israeli studies, more than 60% of patients had police histories (Bar El et al, 1998 and Durst et al, 1999). In Victoria, Australia, Power (unpublished) reported that 72% of CTO recipients had a history of violence towards others in the 5 years before the CTO, while 89% had been violent in the 12 months before the CTO. In North Carolina, Hiday et al (1999) found that, in the previous four months, 8.2% of those eligible for a CTO had themselves been

victims of a violent crime (consistent with the annual rate among patients in a previous study) and 22.4% reported having been victims of a non-violent crime (similar to the annual rate for the general population).

Full details of the clinical characteristics of CTO recipients are presented in Table 4.3(iii).

(d) Characteristics of CTO recipients compared with other groups

Six reports relating to five studies compared the characteristics of patients on CTOs with those of other groups subject to compulsory interventions, three in the US (Monahan et al, 2005/Swartz et al, 2005; Scheid-Cook, 1987; Wood and Swanson, 1985) and two in Australia (Power unpublished; Xiao et al, 2004).

Power (unpublished) compared the characteristics of a randomly selected group of involuntary patients matched for age, sex, diagnosis, area of residence and year of discharge. History of serious violence to others, a high number of previous admissions, and poor compliance with outpatient medication in year before were found to be significantly more common in the CTO group. Power (unpublished) found no differences between the two groups in migrant status, dual diagnosis or self-harm. Xiao et al (2004) did not match for age, sex or diagnosis, and compared the characteristics of CTO patients with patients who are discharged from hospital without CTO arrangements. History of aftercare placement, history of schizophrenia, offences on a person, greater number of inpatient admissions, longer inpatient stays, and greater number of outpatient visits were all found to be significantly more common in the CTO group. Never having been married, and a longer history of mental disorder, were found to be significantly less common. There were no differences in age and sex between the two groups.

Monahan et al (2005) and Swartz et al (2005) compared CTO patients with patients subject to other types of leverage to comply with treatment across five different US sites. After controlling for clinical factors, multiple hospitalizations, low global functioning, and substance abuse were associated with having a CTO. Having a psychotic disorder was significantly associated with CTOs in some, but not all, sites. Those having higher than the median Brief Psychiatric Rating Scale global symptom scores were significantly more likely to receive a CTO at three sites.

In North Carolina, Scheid-Cook (1987) found differences between CTO patients and those either released or hospitalized following court hearings. CTO patients tended to be younger than those hospitalized but older than those released. More black patients were given CTO than white patients, CTO patients were less likely to come from large metropolitan areas than those released or hospitalized, and CTO patients were more likely to have a petitioner who was a relative or neighbour than other groups. CTO patients were also more likely to have schizophrenia than those released, but less likely than those hospitalized. CTO patients were more likely to have a history of medication refusal than those who were released, but less likely than those hospitalized. There were no gender, marital status, or education differences between the groups, nor were there differences in recent dangerousness.

In Nebraska, Wood and Swanson (1985) found differences between CTO patients and unmatched voluntary patients. CTO patients had histories marked by poorer mental and social functioning, a greater incidence of previous mental health services, and were judged to be more paranoid, although not more overtly psychotic, hostile or disturbed in general. They were, however, more likely to have been prescribed psychotropic medication before being first seen as an outpatient, and were more likely to have been prescribed an antipsychotic drug. Compared with matched voluntary patients, CTO patients had a greater likelihood of previous outpatient services through the same clinic and were judged to be more phobic and as manifesting a higher level of hostility at the time of outpatient registration. Overall, differences between committed and voluntary outpatients tended to be associated with differences in their diagnosed mental conditions, even though their levels of overt disturbance when registering through outpatient service were comparable. Compared with inpatients, CTO patients did not differ significantly by sex, age, education, race or marital status. Diagnoses were also comparable, as was the heavy reliance on anti-psychotic medication.

Full details of these comparison studies are presented in Table 4.3(iv).

(e) Summary

There is remarkable consistency in the characteristics of patients on CTOs across jurisdictions embedded in very different cultural and geographical settings.

The descriptive data indicate that patients are typically males, around 40 years of age, with a long history of mental illness, previous admissions, suffering from a schizophrenia-like or serious affective illness, and likely to be displaying psychotic symptoms, especially delusions, at the time of the CTO. Criminal offences and violence are not dominant features amongst CTO patients. This picture is largely reinforced in the comparative data, which suggest that CTO patients are more likely to be severely mentally ill with high hospital admission rate histories, poor medication compliance, and aftercare needs. However, these studies also identified the potential for violence as a characteristic of CTO patients.

Possible explanations for the apparent over-representation of particular groups (for example, males, ethnic minorities) may stem from differences in the factors associated with the nature and course of these disorders (for example, age of onset of symptoms, severity of symptoms experienced, engagement in high-risk or dangerous behaviours, resistance to and non-compliance with interventions, the availability of follow-up care and the likelihood of relapse and hospital readmission). Other factors may also play a role in explaining potential differences in CTO use in different ethnic groups. However, the limitations of the available evidence base prevent any reliable conclusions from being drawn about whether specific groups of patients are more likely to be subject to CTOs.

Table 4.3 Characteristics of patients on CTOs

(i) Details of studies describing characteristics of CTO patients

Study reference	Study details	Comments
Bar El et al (1998)	**Jurisdiction:** Jerusalem, Israel. **Sample:** All CTOs in Jerusalem, Israel from May 1st 1991 to May 1992. N = 50 (65 CTOs). **Data collection:** Data from records at the Office of the District Psychiatrist were supplemented with data about previous and current treatment and clinical status from outpatient and inpatient records. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive cross-sectional survey. Response rate 100%. 15 patients received CTO more than once in the sampling period.
Dawson and Romans (2000)	**Jurisdiction:** Otago, New Zealand. **Sample:** All patients treated under a CTO (25.6% of all patients entering the compulsory assessment process) in Otago, New Zealand between 1st November 1992 and 24th April 1998. N = 259. **Data collection:** Records held in the office of the regional administrator of the Act in Otago. Data extracted to protocol sheet. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive cross-sectional survey. Response rate 100%. Accuracy and completeness of clinical data uncertain.
Durst et al (1999)	**Jurisdiction:** Jerusalem and Southern Districts of Israel. **Sample:** All CTOs in Jerusalem and Southern Districts of Israel from 1991-1995. N = 326. (NB - likely to include cases from the Bar El et al (1998) study. **Data collection:** Patients identified from lists of the district psychiatrists and data extracted retrospectively from medical records. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive cross-sectional survey. Response rate 100%. 326 CTOs but for 208 individual patients. Characteristics of 118 individual patients appear to have been entered twice. Potential distortion of results.
Hiday et al (1999)	**Jurisdiction:** North Carolina, USA. **Sample:** Involuntary admitted psychiatric inpatients with SMI from a state mental hospital and 3 general hospitals, between November 1992 and March 1996, ordered to CTO after discharge. Participants in RCT. N= 331. **Data collection:** Extensive interviews on patients' experience with crime in the	Descriptive cross-sectional – interviews. Refusal rate 11.5%. Potential for recall bias.

	previous four months and their perceived vulnerability to victimization as well as living conditions and substance use. Also used RCT baseline data and medical records. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	
McDonnell and Bartholemew (1997)	**Jurisdiction:** Victoria, Australia. **Sample:** CTO recipients seen by MH Review Board. N = 130, representing around 10% of total number of cases heard over one year. **Data collection:** Details of patients receiving CTOs were sought via a questionnaire sent to community members of the mental health review board, Victoria, Australia over a 3 month period. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive cross-sectional – interviews. Response rate not stated. Sampling method unclear.
Monahan et al (2005)	**Jurisdiction:** 5 US sites – Chicago; Durham, North Carolina; San Francisco; Tampa, Florida; Worcester, Massachusetts. **Sample:** Approx 200 current outpatients (range 200 to 205) from publicly funded mental health programmes in each of the 5 sites. 18-65 years. First contact as an adult at least 6 months ago. **Data collection:** Between October 2002 and December 2003, participants were interviewed in person by trained interviewers. Diagnostic information obtained from clinic charts. Comparative data only. See Table (iv) for comparative data.	Analytic cross-sectional – interviews. Subjects recruited using different methods in different sites – also significant differences between samples in demographic and clinical characteristics associated with type of leverage. Sites not chosen at random – potential problems with generalisability – also differ from national mental health service recipients – potential over-estimate of leverage receipt. Sites used different CTO criteria. Potential for participant recall bias. Demographic and clinical characteristics vary between sites and differ from national picture of MH service recipients (eg number of males, proportion of psychotic patients and frequency of service use) – potential confounders. Refusal rates varied from 2-13% across sites.
New York State Office of Mental Health (2005)	**Jurisdiction:** New York State, USA. **Sample:** All 4,401 referrals resulting in CTOs between November 1999 and end December 2004. Data available for N = 2,745. **Data collection:** OMH Central and Field Office staff record basic information on each court order in electronic tracking system; OMH collects additional information concerning CTO recipients from their case managers via a paper-based survey data	Descriptive cross-sectional audit (naturalistic study). Retrospective. Audit to support the successful implementation of CTO. High risk of reporting bias – eg - information

	collection process. Descriptive data only See Tables (ii) and (iii) for CTO characteristics data.	often recorded or provided by case-managers. Accuracy of data uncertain. Some missing data at follow-up – potential for bias.
Ozgul and Brunero (1997)	**Jurisdiction:** SW of Sydney, Australia. **Sample:** A random sample from the 74 patients with SMI placed on CTOs between Sept 1993 and June 1996. N = 46 (35 current CTOs). **Data collection:** A structured database form recorded all patient information for the 12 months before and after being placed on a CTO. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive cross-sectional – interviews. Retrospective data collection. Community care information acquired retrospectively from existing documentation and health records.
Power (unpublished)	**Jurisdiction:** Melbourne, Australia. **Sample:** All patients residing in the Middle South Sector of Melbourne, Australia placed on a CTO between Oct 1st 1987 and July 31st 1991. N = 125. **Data collection:** Data drawn from case files, Health Department, medical records and patient registers. Both descriptive and comparative data. See Tables (ii) and (iii) for CTO characteristics data. See Table (iv) for comparative data.	Descriptive and analytic cross-sectional survey. Response rate 98%. Some data incomplete.
Rohland (1998) Rohland et al (2000)	**Jurisdiction:** Iowa, USA. **Sample:** All CTO petitions (28% of all petitions) filed in the office of the clerk of court in Johnson County, Iowa, USA from July 1st 1991 to June 30 1996. N= 274 **Data collection:** Data drawn from court records and university information system. Descriptive data only. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive cross-sectional survey. Response rate 100%. No clearly focused question. Potential selection bias.
Scheid-Cook (1987)	**Jurisdiction:** North Carolina, USA. **Sample:** All CTOs (24% of all adult civil commitments) from a stratified cluster sample of all adult civil commitments proceedings in North Carolina, USA in 1984-85. N = 295. **Data collection:** Basic demographic data and diagnostic data were collected from court records. Both descriptive and comparative data. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive and analytic cross-sectional survey. Complete data on only 55% of CTO patients. Accuracy of clinical data uncertain. Unclear how the comparison groups were established. Selection bias may well be affecting these groups. Variability of sizes of groups not accounted for.

	See Table (iv) for comparative data.	
Swartz et al (2005)	**Jurisdiction:** Five US sites: Chicago IL, Durham NC, San Francisco CA, Tampa FL and Worcester MA. **Sample:** Approximately 200 outpatients (range 200 to 205) from publicly funded mental health programmes from five sites. **Data collection:** Cross-sectional study. See Monahan et al (2005) above. Outpatients from each site recruited and interviewed. Comparative data only. See Table (iv) for comparative data	Analytic cross-sectional – interviews. Subjects recruited using different methods in different sites – also significant differences between samples in demographic and clinical characteristics associated with type of leverage. Sites not chosen at random – potential problems with generalisability – also differ from national mental health service recipients – potential over-estimate of leverage receipt. Sites used different CTO criteria. Potential for participant recall bias. Potential for selection bias. Demographic and clinical characteristics vary between sites and differ from national picture of MH service recipients (eg number of males, proportion of psychotic patients and frequency of service use) – potential confounders. Refusal rates varied from 2-13% across sites. See Monahan et al (2005) above.
Wood and Swanson (1985)	**Jurisdiction:** Nebraska, US. **Sample:** All CTOs within a 3 year period in the 4th Judicial District in Nebraska. **Data collection:** Demography and treatment history from review of hospital charts. Both descriptive and comparative data. See Tables (ii) and (iii) for CTO characteristics data. See Table (iv) for comparative data.	Descriptive and analytic cross-sectional survey. Subjects in comparison groups recruited using different methods. Possible selection bias in comparison group. Potential for observer bias.
Xiao et al (2004)	**Jurisdiction:** Western Australia. **Sample:** All CTOs reported in Western Australia between 1997 and 1998. N = 265. **Data collection:** Psychiatric and forensic histories gathered from a comprehensive services database and databases maintained by the mental health review board and the police department. Both descriptive and comparative data. See Tables (ii) and (iii) for CTO characteristics data.	Descriptive and analytic cross-sectional survey – population based record linkage study. Response rate 100%. Possible selection bias in comparison group - characteristics associated with being in the community over-represented in CTO group.

	See Table (iv) for comparative data.	

(ii) Socio-demographic characteristics of CTO recipients

Study	Age at commitment	Gender	Ethnicity	Marital status	Education	Living conditions/ housing
Bar El et al (1998) Israel	Mean 37.5 (SD 10.9) (range 18 – 68)	68% male	98% Jewish 2% Muslim	69% single 18% married 12% divorced 1% unknown	-	-
Dawson and Romans (2000) New Zealand	Mode 27 (range 16 – 86) Mean 40.0 (SD 13.45)	60.2% male	77.2% European 14.3% Maori 1.9% Pacific Islanders 0.8% Asian	-	-	-
Durst et al (1999) Israel	Mean 40.5 (SD 11.9)	71.8% male	Country of birth: 55.4% Israel 19.8% Eastern Europe 3.6% Western Europe 21.1% Middle East or North Africa	59.7% single 22% married 18.2% separated/ divorced or widowed	-	-
Hiday et al (1999) North Carolina, US	Mean 41.3 (SD 10.7) Range 20-70	53.8% male	66.2% African American 33.2% White	1/5 married or cohabiting	Around ¾ had graduated high school	62.5% residing in urban/suburban areas
Ozgul and Brunero (1997) NSW, Australia	Mean 36 (SD 13.74)	67% male	67% Australian-born 85% English-speaking	67% single	-	-
Power (unpublished) Victoria, Australia	Mean 40 (SD 14.9) Range 15-99	58% male	66% Australian born 30% Non-English country	54% single 11% married 30% separated/ divorced	-	90% private flats or houses 6% supported residence 4% Homeless/temp accommodation

						29% living with parents 18% living with partner/spouse 34% living alone
McDonnell and Bartholomew (1997) Victoria, Australia	16-25 18.5% 26-35 23.8% 36-45 17.7% 46-55 18.5% 56-65 10.8% 66-75 3.8%	55.8% male	-	-	-	Housing: 38.5% private/owned 32.3% private/rented 4.6% public 6.9% supported 0% emergency Living with: 40% family 8.5% friends 41.5% alone 10% unknown
New York State Office of Mental Health (2005) New York, US	Mean 37.5	66% male	42% Black (non-Hispanic) 34% White (non-Hispanic) 21% Hispanic 2% Asian 1% Other	75% single/never married 17% divorced 8% married/cohab.	-	38% living with others 37& supervised living 13% living alone 12% other 0.27 mean homeless episodes in last 36 months 19% homeless at least once Number of homeless episodes – range 0-10
Rohland (1998) Rohland et al (2000) Iowa, USA	Mean 37.3 (range 13 – 76)	56.8% male	-	31.4% never married 18.2% living together 1.1% separated 17.5% divorced 2.2% widowed	-	-
Scheid-Cook (1987) North Carolina, USA	39.2% ≤ 30 45.1% 31 – 50	57.3% male	59.2% Black 40.7% White	48.5% single 23.9% married	45.9% 0 – 11 yrs 36.3% High	Town population: 7.6% ≥ 100,000

	15.7% ≥ 50			26.1% separated, divorced, widowed	school 17.8% some college education	6.2% 50,000-99,999 21.8% 25,000-49,999 14.2% 5,000–24,999 11.5% 1,000–4,999 38.7% ≤ 1000
Wood and Swanson (1985)	Median 28.8 (range 21 – 85)	44% male	78% White	67% single	Mean 12 years of schooling (SD 3.1)	-
Xiao et al (2004) Western Australia	-	64.5% male	6.79% aboriginal 93.21% non-aboriginal	-	-	86.8% urban 7.17% rural 4.53% remote 1.51% other

(iii) Clinical characteristics of CTO recipients

Study	Diagnosis	Clinical features	Risk	Forensic history	Previous hospitalisation	Stated reason for CTO	CTO duration
Bar El et al (1998) Israel	85% schizophrenia	60% aggression 60% actively psychotic when CTO initiated Outpatient treatment before CTO: 43% regular 38% sporadic 15% none 3% unknown	-	66% police history	None = 11% 1 = 9% 2-4 = 17 % 5 + = 61%	61 % = non-compliance with treatment 15% = danger to self 0 = danger to self but not immediate 23% = danger to others 23% = danger to others but not immediate	-
Dawson and Romans (2000) New Zealand	54.8% schizophrenia 5.4% schizoaffective 25.9% affective psychosis 1.5% alcoholic psychosis 0.8% postpartum psychosis 1.5% anorexia nervosa 0.8% personality disorder	53.7% delusions 36.3% hallucinations 39% mood disorder 38.2% aggression 27.4% suicide attempts Co-morbidity: 19.3% drug abuse 15.4% alcohol abuse 28.2% either	-	Charged with a crime = 13.1% Involved with the police = 12% Processed under the Criminal Justice Act = 13.1% Under care of a forensic mental health team = 9.7%	-	-	-
Durst et al. (1999) Israel	-	Delusions 63.9% Aggression 27.8%	-	62.4% police record	82.8% previous compulsory hospitalization 35.7% previous CTO	-	-
Hiday et al (1999) North Carolina,	Primary diagnosis: 55.9% schizophrenia or schizo-affective	-	-	-	Mean in previous year 1.5 (SD 1)	-	-

US	disorder 31.1% affective disorder with psychotic features 13% another psychotic disorder						
McDonnell and Bartholomew (1997) Victoria, Australia	73% schizophrenia	-	-	-	-	-	-
New York State Office of Mental Health (2005)	71% schizophrenia or psychotic disorder 52% coexisting alcohol &/or substance abuse disorder	-	-	Mean of 0.52 arrests in last 36 months 30% arrested at least once Number of arrests – range = 0-10 0.35 incarcerations in last 36 months 23% at least once Number of incarcerations – range = 0-10	Mean of 3.08 hospitalisations in last 36 months 97% hospitalized at least once Number of admissions – range = 0-13.	-	-
Ozgul and Brunero (1997)	89% schizophrenia 4% schizo-affective disorder 2% bipolar disorder 4% other	Average age of illness onset 24.98 years (SD 12.86)	-	-	Average number of admissions in the 12 months prior to CTO = 1.51 (SD 0.75). Average length of admission was 21.7 days (SD 16.33).	-	-
Power (unpublished)	78% schizophrenia 4% schizoaffective	Mean duration of illness 11.4 years	5 years before CTO	-	89% had previous hospital	-	Mean 15 months

Victoria, Australia	10% mood disorder 6% delusional disorder 2% other 24% of patients had a secondary diagnosis (the majority involved drug or alcohol disorders)	(range 1-43)	23% to self: 72% to others 39% to property Year prior to CTO To self 18% To others 89% To property		admissions. 82% had previous involuntary admissions. Mean number of previous admissions 6.95 (range 1-41) Mean number of involuntary admissions 4.9 (range 1-27) 51% had at least one admission in the year prior to CTO. 13% had spent > 1 year of their lifetimes as an involuntary patient.		Range 0.25 - 46
Rohland (1998) Rohland et al (2000) Iowa, USA	23.6% schizophrenia 11.2% other psychotic 19.5% manic depn. 10% depression 17.2 % substance abuse 4.1% eating disorder 1.9% adjustment dis. 1.1% dementia 5.6% 2+ diagnoses 5.2% other	-	-	-	-	Danger to: Self = 81.1% Others = 17.9% Medication non-compliance = 26.6% Severely mental impaired= 51.5%	Mean 9.6 months Median 6.4 months Range 0.5 – 55 months
Scheid-Cook (1987)	56.6% schizophrenia 44.4% other	-	Recent dangerousness	-	-	-	-

North Carolina USA			= 67.5 % No recent dangerousness = 32.5%				
Wood and Swanson (1985)	89% psychotic disorders	89% history of services through the same outpatient clinic	-	-	-	-	-
Xiao et al (2004) Western Australia	67.2% history of schizophrenia 24.5% history of personality disorder Diagnostic complexity 12 months prior to CTO 3.4% None 0.4% Low 96.2% High	-	-	Type of first offence: No offence recorded = 44.53% Property offence = 18.87% Antisocial offence = 28.68% Offences on a person = 7.92% Most serious offence 12 months prior to CTO: No offence recorded = 88.68% Property offence = 2.26% Antisocial offence = 5.28% Offences on a person = 3.77%	-	-	-

(iv) Characteristics of CTO recipients compared with other groups

Study	Aims and methods	Outcomes
Monahan et al (2005) Swartz et al (2005)	**Study aim:** To examine the lifetime frequency with which different leverage tools (outpatient commitment, criminal justice, money, housing) are used to improve adherence to psychiatric treatment in the community and to examine correlates of CTO use. **Jurisdiction:** Five US sites: Chicago IL, Durham NC, San Francisco CA, Tampa FL and Worcester MA. **Sample:** Approximately 200 current outpatients (range 200 to 205) from publicly funded mental health programmes in each of the 5 sites. 18-65 years. First contact as an adult at least 6 months ago. **Method:** Between October 2002 and December 2003, outpatients from each site were recruited and interviewed in person by trained interviewers. Diagnostic information obtained from clinic charts. Socio-demographic, clinical and service correlations with CTO use and other types of leverage were examined. Comparison with outpatients subject to criminal justice, money and housing leverage to improve adherence to psychiatric treatment in the community.	❑ Lifetime experience of CTO reported by 12-20% of all patients across the five sites (N = 150 of 1,011 patients) (potential recall bias). ❑ Lifetime experience of any type of outpatient leverage reported by between 44-59% of all patients across the five sites (N= 519 of 1,011). Similar rates of all types of leverage across all five sites. ❑ The group 'at risk' of court mandated orders of any sort demonstrated complex ongoing difficulties in everyday functioning, with frequent problematic behaviour leading to law enforcement involvement and involuntary hospitalizations. ❑ Having a history of multiple hospitalizations and low global functioning were significantly associated with use of each of the four types of leverage (OR = 2.56; 95%CI 1.72 to 3.86 and OR = 0.51; 95% CI 0.25 to 0.76 respectively). Even after controlling for clinical factors, multiple hospitalizations and lower functioning were still associated with having a CTO. ❑ Psychotic disorders were significantly associated with CTOs in some, but not all, sites. ❑ Those having higher than the median BPRS global symptom scores were significantly more likely to receive a CTO at three sites. ❑ Substance abuse significantly increased the likelihood of receiving a CTO, even when clinical factors were controlled for (OR = 1.66; 95%CI 1.09 to 2.54). ❑ Very few patients (N=42) had experienced CTOs or other civil court orders alone. They were demographically similar to consumers with multiple leverages although likely to be a highly selected group. This group reported low perceived coercion and were more likely to report satisfaction with mental health treatment
Power (unpublished)	**Study aim:** To identify whether patients' outcomes can be linked to patient characteristics or circumstances prior to CTO. **Jurisdiction:** Victoria, Australia. **Sample:** All patients residing in the Middle South Sector of Melbourne, Australia placed on a CTO between Oct 1st 1987 and July 31st 1991. **Method:** Data drawn from case files, Health Department, medical records and patient registers. Comparisons were made with randomly selected	The following characteristics were found to be significantly more common in the CTO group compared to the matched group of patients discharged from hospital: ❑ History of serious violence to others ❑ High number of previous admissions ❑ Poor compliance with outpatient medication in year before There were no differences between groups on the following characteristics: ❑ Migrant status ❑ Dual diagnosis ❑ Self Harm

	involuntary inpatients matched for age, sex, diagnosis, area of residence and year of discharge.	
Scheid-Cook (1987)	**Study aim:** To determine what types of civil commitment respondents are ordered to CTO. **Jurisdiction:** North Carolina, US. Preventative CTO. **Sample:** All CTOs (24% of all adult civil commitments) from a stratified cluster sample of all adult civil commitments proceedings in North Carolina, USA in 1984-85. **Methods:** Basic demographic data and diagnostic data were collected from court records. Comparisons were made between patients released, patients given a CTO and patients hospitalized following court hearings. Comparisons were made with patients released and patients hospitalized following court hearings. Numbers appear to be between 100-650 but vary according to comparison.	Differences were found between CTO patients and those either released or hospitalized following court hearings, on the following characteristics: ❑ CTO patients tended to be younger than those hospitalized but older than those released. ❑ More blacks were given CTO than whites ❑ More whites released than blacks ❑ CTO patients less likely to come from large metropolitan areas than those released or hospitalized ❑ CTO patients more likely to have a petitioner who is a relative or neighbour than other groups. ❑ CTO patients more likely to have schizophrenia than released but less likely than those hospitalized ❑ CTO patients more likely to have a history of medication refusal than those released but less likely than those hospitalized There were no differences between groups on the following characteristics: ❑ Sex ❑ Marital status ❑ Education ❑ Recent dangerousness
Wood and Swanson (1985)	**Study aim:** To study committed patients for whom the least restrictive disposition had been determined to be an outpatient treatment setting. **Jurisdiction:** Fourth Judicial District in Nebraska. Least restrictive CTO. **Sample:** All 18 CTOs within a 3 year period. **Method:** Determined patients' admission status, demography, length of stay, treatment, and history of mental health services from review of hospital charts of all patients. Comparisons were made with 18 randomly selected patients voluntarily registered through the same outpatient service, 18 voluntary patients matched for primary mental disorder, and 18 randomly selected inpatients.	Compared with unmatched voluntary patients: CTO patients had histories marked by poorer mental and social functioning ($p<0.001$), and greater incidence of previous mental health services ($p<0.05$). When first seen, CTO patients were judged by interviewers as more paranoid ($p<0.001$), but not more overtly psychotic, hostile or disturbed in general. They were also more likely to have been prescribed psychotropic medication before being first seen as an outpatient ($p<0.05$), and were more likely to have been prescribed an antipsychotic drug ($p<0.01$). Compared with matched voluntary patients: CTO patients had a greater likelihood of previous outpatient services through the same clinic ($p<0.01$) and were judged by interviewers to be more phobic ($p<0.05$). They were also judged by interviewers as manifesting a higher level of hostility at the time of outpatient registration ($p<0.05$). Compared with inpatients: CTO patients did not differ significantly by sex, age, education, race or marital status. Diagnoses were also comparable, as was the heavy reliance on anti-psychotic medication. Significant differences were found in the total number of treatment

		facilities, with the CTO patients having significantly greater use ($p<0.05$). In general, differences between committed and voluntary outpatients tended to be associated with differences in their diagnosed mental conditions even though their levels of overt disturbance when registering through outpatient service were comparable.
Xiao et al. (2004)	**Study aim:** To investigate predictors of CTO placement and to see if there were any differences in the type of patients placed on these orders. **Jurisdiction:** Western Australia **Sample:** All 265 CTOs reported between 1997 and 1998. **Method:** Psychiatric and forensic histories gathered from a comprehensive services database maintained by the mental health review board and the police department. Comparisons were made with 265 patients discharged from hospital on the same day as the CTO case was ordered from hospital or the community.	The following characteristics were found to be significantly more common in the CTO group compared to the group of patients discharged from hospital: ❑ History of aftercare placement ❑ History of schizophrenia ❑ Offences on a person ❑ Greater number of inpatient admissions ❑ Longer inpatient stays ❑ Greater number of outpatient visits The following characteristics were found to be significantly less common in the CTO group compared to the group of patients discharged from hospital: ❑ Never been married ❑ Longer mental disorder history There were no differences between groups of the following characteristics: ❑ Age ❑ Gender

Chapter 5

Experimental and exploratory studies of CTOs

5.1 Introduction

Causal associations between interventions and outcomes should only be inferred from experimental studies, where two groups are compared and it can be assumed that both groups might otherwise have had identical outcomes. In this chapter we have synthesized all those studies that have attempted to look for causal associations by comparing a CTO with an alternative form of care for initially similar groups of patients. A list of these studies is provided in Tables 5.1a-c.

The widely acknowledged gold standard for experimental studies is the randomized controlled trial (RCT). Since CTOs are interventions involving a complex array of legal and medical arrangements, RCTs of CTOs are beset by practical, legal and clinical complexities that make them extremely difficult conduct. The concept of randomly assigning patients to a legal intervention or to a control group in such a way that each participant has an equal chance of being allocated to either group is fraught with practical and ethical problems as well as judicial obstacles (Dawson, 2002). Furthermore, the administrative complexity of a CTO intervention and the array of relevant outcomes mean that RCTs of CTOs are resource-intensive, time-consuming, expensive and difficult to interpret. Accordingly, only two studies have employed randomisation procedures to allocate patients to CTOs. These studies are described in section 5.2. Each trial has been described in detail using information taken from the original reports, and a synthesis of the usable data from both trials taken from a recent Cochrane review is also presented. The main findings of all three studies have been summarized. The specific methodological problems identified for both RCTs are presented in Table 5.2a, and the available outcome data for both trials and the Cochrane review are provided in Tables 5.2b and c.

Given the difficulties of conducting RCTs of this type of intervention, outcome research in this area has tended to be dominated by alternative epidemiological study designs, with the bulk of the literature examining CTO outcomes from reports of non-randomised experimental studies. Five are cohort studies and six are controlled before and after studies. These studies are described in section 5.3 and are summarized in Tables 5.3a-c. As noted in previous chapters, these sorts of analytic study designs are prone to a variety of methodological and interpretation problems, particularly those resulting from bias and confounding. The potential methodological problems associated with these studies are also indicated in Table 5.3a.

Fourteen further reports describe the findings of exploratory, potentially hypothesis-generating analyses of data from these studies, all investigating potential associations between a range of variables and CTO outcomes; two of these used patients from the New York RCT, while the remaining eleven re-analysed data collected as part of the North Carolina RCT. These reports are described in section 5.4 and a brief summary of the analyses is provided in Table 5.4.

Table 5.1a Randomised controlled trial data

Study name	Study/Jurisdiction	Outcomes
Kisely et al (2005)	Systematic review and meta-analysis over all jurisdictions	Readmission, treatment compliance, arrest, homelessness, perceived coercion.
Steadman et al (2001)	RCT in New York State, US	Readmission, length of stay, retention by services, treatment compliance, social functioning, arrest/offences, homelessness, mental state, quality of life, perceived coercion.
Swartz et al (1999)	RCT in North Carolina, US	Readmission, length of stay, service intensity, treatment compliance, social functioning, arrest/offences, homelessness, mental state, quality of life, victimisation, carer satisfaction, perceived coercion.

Table 5.1b – Non-randomised comparative studies

Study name	Jurisdiction	Outcomes
Burgess et al (unpublished)	Australia, Victoria	Readmission
Bursten (1986)	US; Tennessee	Readmission
Geller et al (1989)	US; Massachusetts	Readmission, length of stay
Geller et al (1987)	US; Massachusetts	Readmission, length of stay
Hiday and Scheid-Cook (1987)	US; North Carolina	Readmission, length of stay, services contact/use, treatment compliance, social functioning outcomes
Hiday and Scheid-Cook (1989)	US; North Carolina	Readmission, length of stay, services contact/use, treatment compliance, social functioning outcomes
Hiday and Scheid-Cook (1991)	US; North Carolina	Treatment compliance
Kisely et al (2004)	Western Australia	Readmission
Power (unpublished)	Australia, Victoria	Readmission, length of stay, service use, medication compliance, violence
Preston et al (2002)	Western Australia	Readmission, length of stay, service use
Vaughan et al (2000)	Australia; New S.Wales	Readmission, length of stay, service use, treatment compliance, duration of disturbed behaviour

Table 5.1c Exploratory analyses of CTO trial data

Study name	Outcome	Explanatory variables
Elbogen et al (2003)	Perceived coercion Treatment adherence	Demographic and clinical factors; Duration of CTO; Representative payeeship.
Groff et al (2004)	Caregiver strain	Baseline caregiver strain, Baseline predictors, Duration of CTO; Service intensity; Treatment adherence.
Hiday et al (2002)	Victimisation	Baseline caregiver strain, Baseline predictors, Duration of CTO; Service intensity; Treatment adherence.
Rain et al (2003)	Treatment adherence	Demographic and clinical factors; Perceived coercion.
Steadman et al (2001)	Rehospitalisation	CTO assignment; Diagnosis; Existence of a medication order; Case management type; and Services.
Swanson et al (2000)	Violent behaviour	Demographic and clinical factors; Duration of CTO; Violence; Levels of insight; Service intensity; Medication adherence; Substance misuse status.
Swanson et al (2001)	Arrest	Demographic and clinical factors; CTO assignment; Duration of CTO; Medication adherence; Service intensity.
Swanson et al (2003)	Quality of life	Demographic and clinical factors; Duration of CTO; Case manager reminders; Treatment adherence; Hospital readmissions; Perceived coercion; Treatment intensity.
Swartz et al (1999)	Perceived coercion	Socio-demographic characteristics; Levels of insight; Case manager reminders.
Swartz et al (1999)	Hospital readmission	Demographic and clinical factors; Diagnosis, Duration of CTO; Service intensity.
Swartz et al (2001)	Hospital readmission Medication compliance Homelessness Violent behaviour Arrests Criminal victimisation	Duration of CTO; Service intensity; Diagnosis; Substance abuse.
Swartz et al (2001)	Treatment adherence	Baseline characteristics; Duration of CTO; Service intensity; Oral vs depot injection; Medication adherence.
Swartz et al (2002)	Perceived coercion	Socio-demographic characteristics; Other baseline characteristics; Duration of CTO; Case manager behaviour; Diagnosis of psychosis; Substance abuse; Levels of insight; Functioning and symptom severity.
Wagner et al (2003)	Treatment intensity	Socio-demographic characteristics; Diagnosis; Clinical characteristics; CTO assignment; Baseline characteristics; Duration of CTO; Medication adherence; Substance abuse; Violent behaviour; Arrest; Level of insight.

5.2 Randomised controlled studies of CTO outcomes

(a) Introduction

Two randomized controlled trials (RCTs) have been undertaken to investigate the effectiveness of CTOs, one in North Carolina between 1993 and 1996 (primary reference Swartz et al, 1999), and the other in New York between 1994 and 1997 (Steadman et al, 2001). CTO provisions were similar in both states. In the New York study, CTO services were provided by a hospital-based community coordination team, whereas in the North Carolina trial, CTO services were provided through community-based case management. Both RCTs evaluated CTOs intended to be used to prevent relapse and hospital recidivism, and both involved patients with severe mental illness from inpatient wards. Special arrangements with the courts allowed patients deemed suitable for CTO by clinicians and tribunals and who were essentially non-violent, to be randomized to a CTO and to a non-CTO group. In both studies, the CTO and control groups both received an intensive community care plan. A recent Cochrane systematic review of RCTs of compulsory community and involuntary outpatient treatment for people with severe mental disorders has also been undertaken and incorporates the data from these two RCTs (Kisely et al, 2005).

(b) Description of studies

North Carolina

Aims

This study took place between 1993 and 1996 and aimed to investigate whether CTOs effectively reduced hospital readmissions. A number of secondary outcomes were also of interest including functioning, criminal victimization of patients, violent behaviour, arrests and the mitigation of strain among families and caregivers. Additional research questions related to the necessary duration of the CTO, identifying clinical populations for which CTO might be most effective, and the role of treatment intensity in improving effectiveness.

Overall design

The study involved random assignment of eligible involuntarily admitted patients from one state hospital and three general hospitals to either undergo CTO for an initial period of no longer than 90 days, or to be released. The randomisation procedure was not described. Renewals were left to the discretion of the clinician and the court. Follow-up interviews with participants, family members, and case managers took place every four months for a period of 16 months. Data were also obtained from treatment, hospital admission, and arrest records for the previous two years. Patients in both groups received a full treatment plan, including case management and outpatient treatment as clinically indicated.

Patients

Eligibility criteria: Involuntarily hospitalised patients awaiting a period of mandatory treatment in the community after discharge, aged at least 18 years or more, with a primary diagnosis of schizophrenia, schizoaffective disorder, other psychotic disorder, or major mood disorder, with duration of illness of at least one year and who consented to

participate. Patients also had to have significant functional impairment in activities of daily living, and to have received intensive treatment within the past two years. Patients with a documented history of serious assault were excluded; only non-violent participants were randomised.

Overall patient description: Patients had a mean age of 39 years. Approximately half were men, roughly two thirds were African American, almost all were poor, most with only high school education or less, and only one fifth were married or cohabiting. Most had a diagnosis of psychotic disorder; about two thirds had schizophrenia, schizoaffective disorder, or another non-affective psychotic disorder. Of those with mood disorders, bipolar disorder was the most common diagnosis. One third of the participants had co-occurring substance abuse problems. The total number of patients enrolled in the study was 331. Of these, 67 could not be randomized because they had a documented history of violence. Therefore, a total of 264 patients were randomized to CTO or Control.

Intervention
Patients were court-ordered to receive case-management services and outpatient treatment. This was enforceable at the threshold of three consecutive missed appointments by a police pick-up order. Patients remained under court order and by law received an initial period of CTO of no longer than 90 days. Thereafter, the CTO could be renewed for up to 180 days if a psychiatrist and the court determined that the person continued to meet legal criteria for CTO. The number randomized was 129.
Characteristics of group: 50% were male, 63% were African American. Mean age was 39.6 years (SD 10.37). 20% were married/cohabiting. 15% were recently homeless. Mean number of psychiatric admissions per year was 1.5. 64% had a diagnosis of schizophrenia/schizoaffective disorder, 24% had affective disorders, and 13% had other diagnoses. Mean age at onset 23.4 years. Co-occurring substance use was identified in 60% of patients.

Comparison
By agreement of the court, patients received case-management services and outpatient treatment, but received immunity from any CTO during their study year. Patients received prompt unscheduled home visits on the threshold of 3 consecutive missed appointments and counselling about the consequences of treatment non-adherence. The total number randomized was 135.
Characteristics of group: 50% were male, 65% were African American. Mean age was 39.8 years (SD 11.07). 20% were married/cohabiting. 15% were recently homeless. Mean number of psychiatric admissions per year was 1.6. 58% had a diagnosis of schizophrenia/schizoaffective disorder, 38% had affective disorders, and 4% had other diagnoses. Mean age at onset 23.4 years. Co-occurring substance use was identified in 56% of patients.

Comment
Randomization procedures were not described in this study and the allocation procedure was not concealed from the investigators, but good descriptions of the provisions of the CTO and the source and type of patients were provided. Outcomes appeared to have been

specified a priori, but outcome assessment was not conducted blind and there was no indication that those conducting the data analyses were blinded. Reports about losses to follow-up were unclear and clarification was sought from the authors. By the end of the study, a total of 48 patients (18.2%) had dropped out and 216 patients remained in the study; 102 in the CTO group and 114 in the Control group. Data reporting often provided few measures of spread for continuous data and insufficient data for further analysis.

Twelve papers were identified relating to this trial, dealing either with specific aspects of the study or with individual outcomes. However, the vast majority of these papers reported findings from post hoc analyses of naturalistic follow-up data. Although allocation to CTO was randomized, thereafter the investigators had no control on how long the CTO was applied, and clinicians and the courts took over the decision-making process. Therefore, the amount of time on a CTO was neither random, nor experimentally controlled. Additionally, 67 patients who were excluded from the trial due to a history of violence, but who received CTOs outside of the trial, were often included in these post hoc analyses. By definition, the violent patients and those receiving CTOs for longer or shorter durations were selected groups and therefore not similar to begin with. The authors themselves state that renewals were more likely in those with a baseline history of medication non-compliance. In many of the papers, data from randomized and non-randomised comparisons are combined and impossible to separate out. Data used in these exploratory analyses are prone to all the biases that RCTs are designed to minimize. They are helpful for generating new hypotheses, but not for investigating causal associations. The findings from these exploratory analyses are therefore dealt with in section 5.4.

New York

Aims

In 1994, New York state legislature authorized a 3 year CTO pilot programme at Bellevue Hospital to be independently evaluated. This study aimed to evaluate the effectiveness of this programme.

Overall design

The study involved random assignment of eligible referred persons to CTO, including enhanced services, or to the enhanced package alone. Randomisation was by random number list, but allocation was not concealed from coordinating team. Follow-up interviews were conducted with patients at 1, 5 and 11 months after hospital discharge (selected to coincide with initial linkage to community supervision, the conclusion of the first 180 day order and the conclusion of the second commitment order if one had been issued). Data on hospitalizations were taken from New York City Health and Hospitals Corporation, and information about arrests was taken from the New York State Division of Criminal Justice Services. Data were also obtained from hospital chart reviews and patient self-report.

Patients

Eligibility criteria: Participants were current Bellevue patients aged 18 years or more with at least two involuntary admissions in the past 18 months resulting from treatment

non-compliance. They had to be judged unlikely to comply with services once discharged, in need of involuntary treatment to prevent relapse, and likely to benefit from such a programme. Patients with a history of violence were excluded. Between January 1996 and February 1998, 567 patients were referred for CTO by Bellevue Hospital staff. Of these, 315 were eligible for CTO, but 112 were either discharged, absconded from hospital, or were withdrawn by the psychiatrist. Although 175 (86%) consented to participate, 23 subsequently absconded or were discharged prior to assignment. The refusal rate was similar for men and women.
Overall patient description: Out of the 152 potential patients, 142 (94 men and 48 women) completed baseline interview. The majority of patients had a psychotic disorder. Both groups were highly symptomatic on Global Assessment of Functioning at baseline.

Intervention
Patients received a court-ordered enhanced services package, including: patient assessment, a comprehensive post-discharge treatment plan in which the patient participated, arrangements for ongoing case management, and continued oversight of the patient by the outpatient coordinating team. The number randomized was 78, of which 39 were committed with a medication order (for people thought by the court to lack the capacity to give informed consent) and 38 were committed with no medication order. The CTO recommendation was rejected by the court for one patient.
Characteristics of group: 69% were male, 32% were Caucasian, 39% were African American and 21% were Latino. Mean age was 41 years (SD 11). Median length of index hospitalization was 52 days. 81% of patients were receiving entitlements and 22% were employed. 10% of patients were homeless at the index hospitalization. Median length of stay was 53 days. 72% had a diagnosis of schizophrenia, schizoaffective disorder, or other psychotic disorder. Co-occurring substance use disorder was identified in 56% of patients. 72% reported high level of coercion (MacArthur Perceived Coercion Scale).

Comparison
Patients received exactly the same enhanced services package as for the intervention, but without the court order. The number randomized was 64.
Characteristics of group: 62% were male, 42% were Caucasian, 36% were African American and 14% were Latino. Mean age was 41 years (SD 12). Mean length of index hospitalization was 51 days. 78% of patients were receiving entitlements and 16% were employed. 33% of patients were homeless at the index hospitalization. Median length of stay was 51days. 78% had a diagnosis of schizophrenia, schizoaffective disorder, or other psychotic disorder. Co-occurring substance use disorder was identified in 39% of patients. 63% reported high level of coercion (MacArthur Perceived Coercion Scale).

Comment
Although randomization was not described and the allocation procedure was not concealed from the investigators, good descriptions of the provisions of the CTO and information about the source and type of patients were provided. It was not possible to tell whether outcome measures had been specified a priori. Outcome assessment was not conducted blind and there was no indication that those conducting the data analyses were blinded. However, it has been reported that members of the Control group and their case

managers did think they were actually in the CTO group, although it is not at all clear in which direction this might have influenced their behaviour (NASMPD, 2001). Loss to follow-up was between 32% and 45% and overall, between 55% and 68% subjects were interviewed at each follow-up. Reported reasons for loss to follow-up were: refusal to be interviewed (7% at one month, 7% at 5 months, 14% at 11 months); too impaired for interview (9% at one month, 7% at 5 months, 11% at 11 months); moved (2% at one months, 9% at 5 months, 10% at 11 months). Actual numbers from each group were not reported, although more people in the CTO group contributed data across all three follow-up timepoints. Reports of the trial suggest that logistic regression analysis indicated no bias as a result of attrition, although no details are provided. The authors report that many aspects of the CTO pilot programme were in a state of flux during the study period. For example, due to Police Department misgivings, special enforcement mechanisms for pick-up orders for non-compliance were not available during the trial, despite service providers' occasional use of the threat in the event of non-compliance. Few details about significance tests and secondary outcomes were provided. Study size was modest and, although sufficient for valid comparison on main outcomes, was insufficient for any subgroup analyses.

The enhanced services available to the two groups in this study were identical. The only component that was different was that the CTO group had their enhanced services imposed on them by a court order. The authors attempted to provide some cost information around the use of adding a court order to the provision of the enhanced services package (no details provided), and concluded that there was no statistically significant difference in the average rehospitalisation times of the two groups. Since no differences were found between groups on all major outcomes, this study provided no evidence that a legal component was necessary for enhanced services to be effective. Given the implementation problems associated with the initiation of the CTO arrangements, it is true that this study did not necessarily provide a fair comparison of a court-ordered and non-court-ordered package of services. However, a pure before and after comparison of both groups also suggested that enhanced services had a beneficial effect on outcomes for all patients, that is, both the CTO and Control groups had significantly fewer rehospitalisations during the 11 month period in the programme. Nevertheless, before and after comparisons also suggested both groups changed very little on both symptomatology and quality of life outcome measures. It is possible that the pilot programme itself, however flawed, committed providers and coordinators within the system to organize and provide a level of service that resulted in beneficial outcomes for patients, even without the administrative and legal resources required to impose and enforce a court order.

(c) Main findings from both RCTs

Between them, the New York and North Carolina studies found no statistically significant differences between the CTO and Control groups in terms of hospital admissions, length of stay, contact with services, service intensity, compliance with treatment, social functioning, offences resulting in arrest, homelessness, general mental state, psychopathology, quality of life, carer satisfaction, or perceived coercion. Although

collected as part of one or other of the trials, no specific data were reported relating to other outcomes including employment, self-esteem, other adverse effects, needs for care, or patient satisfaction. In the North Carolina trial, hospitalisation was the only outcome for which a true intention to treat analysis was undertaken, and the only outcome for which a significant difference between groups was indicated was criminal victimization (see Tables 5.2b and c; North Carolina trial). No cost-effectiveness studies of CTOs were identified.

In both trials there was evidence to indicate that both the CTO and Control groups experienced significantly fewer hospitalisations during the study period than in the preceding 12 months. There are a number of potential explanations for these observations, but it should be noted that, like the naturalistic studies described in Chapter 4, they are based on before and after data. Therefore, regression to the mean, due to being recruited into the trial when symptoms were especially severe, may at least partially explain the observed reductions in hospitalizations. Furthermore, it is possible that the service enhancements and improved coordination resulting from the implementation of a CTO programme in both jurisdictions yielded genuine benefit for patients, and that the addition of a court order made little discernable difference to outcome.

(d) Summary

Both the North Carolina and New York studies evaluated preventative CTOs. In summary, despite obtaining data on approximately 20 different outcome variables between them, with the exception of one secondary outcome, neither trial reports any statistically significant differences between the CTO and the Control groups. Both studies encountered methodological problems with RCT design and conduct and problems CTO implementation.

Findings from a Cochrane review indicate that, even when data from both trials are pooled to improve study power, CTOs are not an effective alternative to standard care. The Cochrane review reports no significant differences in available measures of health service utilization, social functioning or satisfaction at one year. CTO recipients were no less likely to be readmitted to hospital and they were just as likely to comply with medication as those receiving standard care. The numbers of acts of violence and arrests, and the numbers of people who were homeless by one year were also similar in both groups. Although not statistically significant, it was notable that fewer people in the standard care group felt pressured into attending treatment sessions. Although none of the main outcomes were statistically significantly different, taking the estimated differences between the CTO and Control groups and using the proportion of people with the main outcomes, the Cochrane reviewers calculated that 85 people with mental illness would need to receive a CTO in order to avoid one admission, 238 people would need to receive a CTO in order to avoid one arrest, and 27 people would need to receive a CTO to prevent one episode of homelessness. On the basis of data from the North Carolina study demonstrating that CTO recipients were significantly less likely to have been victims of violent or non-violent crime, 6 people would need to receive a CTO in order to prevent one victimization incident.

Table 5.2a – Quality of studies reporting randomized data

Methodological characteristic	New York	North Carolina
Randomisation:	Randomised and description provided. Random number list used to assign to intervention or control group.	Randomised, but method not described.
Allocation concealment:	Adequacy uncertain.	Adequacy uncertain.
Comparability of groups at baseline:	Did not differ significantly in gender, race, age and median length of stay. Control group significantly more likely to be homeless at the time of their index hospitalization (p=0.001). Experimental group more likely to have co-occurring substance use disorder (p=0.04). Significant differences were found in the CTO group in the proportions of subjects hospitalized in the 12 months before the index admission and in the first 11 months under the commitment order.	Groups broadly similar at baseline, although significantly lower levels of insight (p=0.03) and significantly lower levels of medication compliance (p=0.02) were found in the CTO group.
Blinding at outcome assessment:	Outcomes not assessed blind; scope for bias, although self-report measures used to assess some outcomes. Also, some suggestion that members of the control group and their case managers thought that were actually receiving CTO.	Outcomes not assessed blind; scope for bias, although self-report measures used to assess some outcomes.
Implementation problems:	No-pick up order (police transport to hospital) procedures for non-compliant subjects were implemented in the CTO group compromising differences between groups (although service providers often used the threat of enforcement in the CTO).	Two groups treated equally apart from the intervention.
Reporting (all patients accounted for?):	Originally randomized 152 patients. However, 10 were excluded from all reporting, although all data subsequently made available to Cochrane review. Not reported by group.	Difficult to disentangle numbers from all the papers of this study. Total enrolled = 331. 67 (20%) excluded due to a history of violence. Total of 264 at baseline.
Overall loss to follow-up:	Between 32% and 45% over 3 follow-ups. 45% at 11 months. Not reported by group.	Dropout during study N=48 (CTO=27; Control=21). Remaining by group were CTO 102 and Control 114.
Analysis (ITT?):	Ten patients excluded post randomization, although full data set subsequently available from Cochrane review.	ITT and completers analysis although randomized data sometimes conflated with non-randomised.
Generalisability of patient group:	Patients with recent history of multiple involuntary hospitalizations were included but patients with a history of violence were excluded.	Patients with recent history of multiple involuntary hospitalizations were included, but patients with a history of violence were excluded.
Overall methodology rating:	5/10	7/10

Table 5.2b Reported outcomes from RCT data – Health service outcomes

Outcome [i]	Study [ii,iii]	Available data	Interpretation
1. Health service contact and utilization			
1.1 Admission to hospital by 11-12 months	New York	Acute hospitalization RR = 1.17 (95% CI 0.81, 1.69) Acute hospitalisation, at least one: CTO 47%; Control 40% Acute hospitalisation, multiple: CTO 25%; Control 12% State hospitalisation, at least one: CTO 11%; Control 22% State hospitalisation, multiple: CTO 0%; Control 4%.	**No significant differences between the CTO and Control groups in hospital admissions.** Both the CTO and control group had significantly fewer rehospitalisations during the 11month follow-up period (p<0.001), and the number of multiple hospitalisations was significantly reduced in the Control group only (p=0.003). NB 4 CTO and 5 Control group patients had shorter follow-up periods – mean 9.5 months.
	North Carolina	RR = 0.89 (95% CI 0.68, 1.15) CTO 43%; Control 40%.	**No significant differences between the CTO and Control groups in hospital outcomes.**
	Cochrane review	2 RCTs, n=416, pooled RR = 0.98 (95% CI 0.79, 1.21) p=0.8	**No difference between the CTO and Control groups in readmission to hospital.**
1.2 Length of stay	New York	Median number of days hospitalized, acute: CTO 43; Control 69. Median number days hospitalized, state: CTO 79; Control 61 Median number days for all hospitalizations: CTO 43; Control 101.	**No significant differences between the CTO and Control groups in length of stay in hospital.** 4 CTO and 5 Control group patients had shorter follow-up periods – mean 9.5 months. NB – No details of analysis and insufficient data for reanalysis.
	North Carolina	Not reported	-
	Cochrane review	Insufficient data available	-
1.3 Remaining in contact with psychiatric services	New York	Compiled measure of treatment discontinuation from self-report and interviews with community providers: CTO 27%; Control 26%	**No significant differences between the CTO and Control groups in treatment discontinuation.** Treatment discontinuation did vary by residential placement, but not by group, being significantly higher in those in co-occurring substance use programmes and significantly lower in those in ACT programmes (9.7%). NB – No details of analysis and insufficient data for reanalysis.
	North Carolina	Not reported	-

	Cochrane review	Insufficient data available	-
1.4 Service intensity	New York	Not reported	-
	North Carolina	Service categories included frequency of total outpatient visits, psychiatrist visits (mostly for medication management), outreach, crisis, case management, outpatient counselling and other services. Total visits mean: CTO 6.3 (SE 0.86); Control 5.75 (SE 0.82) Mean outpatient visits for all categories 8% to 15% higher in CTO group, but not significantly different.	**No significant differences between the CTO and Control groups in overall service intensity.** Psychiatrists visits (medication management) alone were significantly more frequent (CTO 1.08 (SE 0.15); Control 0.42 (SE 0.05), p=0.001).
	Cochrane review	Insufficient data available	-
1.5 Compliance with treatment	New York	Compliance figures (taken from Cochrane review): RR = 0.96 (95% CI 0.77, 1.19) CTO 67%; Control 70% Self-reported treatment non-compliance for not attending hospital when they thought they should figures (taken from trial report): CTO 8%; Control 9%.	**No significant differences between the CTO and Control groups in medication or treatment compliance.**
	North Carolina	RR = 1.03 (95% CI 0.77, 1.37) CTO 42%; Control 41%.	**No significant differences between the CTO and Control groups in treatment compliance (composite measure).**
	Cochrane review	2 RCTs, n=416, pooled RR = 0.99 (0.83, 1.19) p=0.9	**No differences between the CTO and Control groups in medication compliance.**

[i] List of outcomes modified from Kisely et al (2005)

[ii] Data presented on New York trial take account of the number originally allocated to CTO and Control groups (N=85 and 67 respectively), thus the percentages differ slightly from those presented in the published paper which ignores 10 pre-baseline interview dropouts.

[iii] Data from Cochrane review incorporates and combines the analyzable data from the New York and North Carolina studies, providing a synthesis of the two.

Table 5.2c Reported outcomes from RCT data – Patient level outcomes

Outcome [i]	Study [ii,iii]	Available data	Interpretation
2. Social functioning			
2.1 General	New York study	Mean Global Assessment of Functioning score (1=lowest level of functioning, 90=highest level of functioning): CTO 44 (N=58); Control 47 (N=40)	**No significant differences between CTO and Control groups on any symptomatology outcome.** NB - No details of analysis and insufficient data for reanalysis.
	North Carolina	Not reported	-
	Cochrane review	Insufficient data available	-
2.2 Specific – imprisonment, violent/threatening behaviour, police contact, and arrests	New York study	Any arrest RR = 1.10 (95% CI 0.52, 2.33) At least one arrest: CTO 18%; Control 16%. Multiple arrests: CTO 9%; Control 9%. Total: CTO 33%; Control 36%. Property offence: CTO 43%; Control 60%. Drug offence: CTO 43%; Control 30%. Other/minor: CTO 14%; Control 10%. No persons arrested for violent offences.	**No significant differences between the CTO and Control groups on any arrest, multiple arrests, number of arrests, or most serious charge.**
	North Carolina	At least one arrest: RR = 0.90 (95% CI 0.51, 1.59) CTO 15%; Control 16% Ever arrested/violent acts/police contact: RR = 0.82 (95% CI 0.56, 1.21) CTO 26%; Control 31%.	**No significant differences between the CTO and Control groups on arrests.**
	Cochrane review	At least one arrest: 2 RCTs, n=416, pooled RR = 0.97 (95% CI 0.62, 1.52) p=0.9. Ever arrested/police contact: Based on one study only.	**No difference between the CTO and Control groups in single arrests.**
2.3 Specific – employment	New York study	Not reported	-
	North Carolina	Not reported	-
	Cochrane review	Insufficient data available	-

2.4 Specific – accommodation status by 11-12 months	New York	Homeless during one or more of their follow-up interviews: RR = 0.79 (95% CI 0.38, 1.64) CTO 12 (18%); Control 12 (25%)	**No significant differences between CTO and Control groups in likelihood of homelessness.**
	North Carolina	Homeless: RR = 0.56 (95% CI 0.24, 1.27) CTO 8/129; Control 15/135	**No significant differences between CTO and Control groups in likelihood of homelessness.**
	Cochrane review	Homelessness: 2 RCTs, n=416, pooled RR = 0.67 (95% CI 0.39, 1.15) p=0.1	**No differences between CTO and Control groups in likelihood of homelessness.**
3. Mental state			
3.1 General	New York	Mean Positive Negative Syndrome Scale (PANSS) general psychopathology score (Range 16-112 with higher score indicating more sever symptoms): CTO 27 (N=57); Control 28 (N=40)	**No significant differences between CTO and Control groups on any symptomatology outcome.** NB - No details of analysis and insufficient data for reanalysis.
	North Carolina	Not reported	-
	Cochrane review	Insufficient data available	-
3.2 Specific - psychopathology	New York	PANSS Positive scales mean: CTO 16 (44%); Control 15 (41%) PANSS Negative scales mean: CTO 17 (56%); Control 16 (39%)	**No significant differences between CTO and Control groups on PANSS positive and negative mean scores.** NB – No details of analysis and insufficient data for reanalysis.
	North Carolina	Not reported	-
	Cochrane review	Insufficient data available	-
4. Quality of life			
4.1 General	New York	Mean Lehman Brief QoL Index score (1=poor, 7=good): CTO 4.4 (N=50); Control 5.0 (N=35)	**No significant differences between CTO and Control groups on any quality of life outcome measures.** NB - No details of analysis and insufficient data for reanalysis.
	North Carolina	Mean Lehman Brief Quality of Life Index score: CTO 4.97 (SD 0.94); Control 4.83 (SD 0.93), p=0.3 Mean re-coded 3 level version of the QOL score: CTO 2.36 (SD 0.69); Control 2.28 (SD 0.72), p=0.4.	**No significant differences between CTO and Control groups on any quality of life outcome measures.** NB Data only available for 221patients only.
	Cochrane review	Insufficient data available	-

4.2 Self-esteem	New York	Not reported	-
	North Carolina	Not reported	-
	Cochrane review	No data available	-
4.3 Victimisation	New York	Not reported	-
	North Carolina	Self-reported victimization (being victim of violent or non-violent crime): RR = 0.50 (95% CI 0.31, 0.80) p=0.004 CTO 16%; Control 31%.	**CTO group were significantly less likely than Control group to experience any criminal victimization.** NB - Missing data on 80 patients (44 CTO; 36 Control). Authors compared on baseline variables and found no differences. However, still potential bias due to differential attrition.
	Cochrane review	Analyses based on one study only.	-
4.4 Adverse effects	New York	Not reported	-
	North Carolina	Not reported	-
	Cochrane review	No data available	-
5. Satisfaction			
5.1 Number of needs for care	New York	Not reported	-
	North Carolina	No data explicitly on differences between groups in the number of needs for care, but some data to suggest that for all patients with clinical need (regardless of group) outpatient visits were more frequent.	N/A
	Cochrane review	No data available	-
5.2 Patient satisfaction	New York	Not reported	-
	North Carolina	Not reported	-
	Cochrane review	No data available	-
5.3 Carer satisfaction	New York	Not reported	-
	North Carolina	Caregiver (family/non-family member identified by patient or clinician/case manager and self-identified as primarily responsible for providing care. Provided	**No significant differences between CTO and Control groups in levels of care-giver strain.** Only 82% caregivers available at

		subjective caregiver strain rating: CTO 41%; Control 40%	baseline and a further 28% were lost to follow-up. Data on 177 out of 264 only. NB – No details of analysis and insufficient data for reanalysis.
	Cochrane review	Insufficient data for re-analysis	-
5.4 Perceived coercion – 11 - 12 months	New York	RR = 1.25 (95% CI 0.75, 2.10) Number scoring more than 3 on the MacArthur Admission Experience Survey on levels of coercion. Regarding hospitalization (of those rehospitalised): CTO 11 (55%); Control 8 (67%) Regarding medication: CTO 28 (56%); Control 17 (53%) Regarding treatment: CTO 27 (51%); Control 17 (46%)	**No significant differences between CTO and Control groups in number reporting perceived coercion.** Results did not differ according to whether or not the patient had a medication order.
	North Carolina	RR = 1.43 (95% CI 0.93, 2.21) CTO 27%; Control 20% MacArthur Admission Experience Survey mean score: CTO 6.2; Control 3.8 Mean perceived coercion scores: CTO 2.1; Control 1.3	**No significant differences between CTO and Control groups in number reporting perceived coercion.**
	Cochrane review	2 RCTs, n=416, pooled RR = 1.36 (95% CI 0.97, 1.89) p=0.07.	**No difference between CTO and Control groups in numbers reporting perceived coercion.**

[i] List of outcomes modified from Kisely et al (2005)

[ii] Data presented on New York trial take account of the number originally allocated to CTO and Control groups (N=85 and 67 respectively), thus the percentages differ slightly from those presented in the published paper which ignores 10 pre-baseline interview dropouts.

[iii] Data from Cochrane review incorporates and combines the analyzable data from the New York and North Carolina studies, providing a synthesis of the two.

5.3 Non-randomised comparative studies of CTO outcomes

(a) Introduction

To be able to infer a causal association from an experimental study whether randomized or not, there must be good justification for assuming that both the intervention and the comparison group might have had identical outcomes without the intervention or with the same intervention. Thus, at baseline, the two groups must be as similar as possible on all factors that might influence outcome, some of which will be known or suspected, and some of which will be unknown. RCTs, when large enough, are the best method for ensuring equivalence between experimental and control groups on both known and unknown factors. However, undertaking an RCT is not always possible or practical and, where evidence from RCT about the effects of an intervention is flawed, limited, or unavailable, findings from other types of epidemiological studies might reasonably be considered. Non-randomised comparative studies, including cohort studies (which follow up people over long periods to examine the association between 'exposure' to CTOs and outcome), and controlled before and after studies (which measure outcomes in an intervention group and a non-randomised comparison or 'control' group before and after a CTO), have been undertaken to evaluate the effects of CTOs.

Non-randomised comparative studies are prone to selection bias and potential confounding resulting from pre-existing imbalances between groups. Unless these factors can be adequately controlled for at the design or analysis stage, this limits the causal inferences that can be made on the basis of their findings. Despite these limitations, possible advantages of these epidemiological designs are their scope for involving larger numbers of more representative patients, their ability to incorporate lengthier follow up periods, and their improved generalisability and external validity.

Eleven reports (five analyses of cohorts and six controlled before and after studies) from seven non-randomised comparative studies of CTO outcomes were identified. Four studies were undertaken in Australia (one in Western Australia, one in New South Wales, and two in Victoria) and three were undertaken in the US (one in Tennessee, one in Massachusetts, and one in North Carolina). All studies reported the effects of CTOs on readmission, five on length of stay, and three described the effects on other health service outcomes. Three studies reported a range of patient level outcomes. All studies compared CTO patients with patients discharged from hospital without a CTO, and one study also compared CTO patients with those who had been hospitalized involuntarily. Six of the seven studies matched comparison groups and five adjusted for additional confounders in the analysis. However, all had evidence of uncontrolled residual confounding, and all had additional methodological flaws making interpretation problematic.

(b) Description of studies

The aims, methods, patients, comparisons, and outcomes are described below and are summarized in Table 5.3a along with the main limitations of each study. Table 5.3b presents the reported health service outcomes and Table 5.3c the reported patient level outcomes from these studies. Multiple reports and analyses of the same patients or dataset are dealt with together.

Study aim, method and outcomes

Bursten (1986) conducted an early controlled before and after study evaluating a least restrictive CTO in Tennessee. Although no explicit study question is reported, the study aimed to assess whether it was accomplishing its aim, to look at what factors were enhancing and/or retarding the program success and consider whether it should be continued. Data were collected from hospital case-records and effect on hospital readmission was the only outcome reported. Data collection procedures were not stated.

Vaughan et al (2000) conducted a controlled before and after study to evaluate a least restrictive CTO in New South Wales in Australia. The aim of the study was to investigate the readmission rate, and the level of patient disturbance and community care associated with readmission following CTO. Data were collected retrospectively from hospital case-notes, family reports and mental health schedules and CTO treatment plans, and effects of hospital readmission rates, length of stay, service intensity, compliance with treatment and behavioural disturbance of readmitted patients were evaluated. Family reporting of disturbed behaviour was of uncertain validity and, although raters of service intensity were blinded to CTO status, rating of other outcomes was not undertaken blind

Power (unpublished) as part of a larger study, conducted a controlled before and after study of CTOs in Victoria, Australia. This type of CTO incorporates both least restrictive and preventative elements. The aim of the study was to determine whether clinical outcomes for CTO patients were comparable to the outcomes for a Control group. Data were collected retrospectively from patients' case files, medical records and patient registers, and effects on readmission rates, service intensity, compliance with treatment, violence, general mental state, dropout and death were evaluated. Data collection procedures were not stated.

Burgess et al (unpublished) conducted a retrospective cohort also in Victoria, Australia. The study aimed to examine whether CTO patients were at reduced risk of readmission to hospital. Data were collected from an existing case register and readmission rates were evaluated. Data collection procedures were not stated.

Preston et al (2002) conducted a controlled before and after study in Western Australia. The study aimed to examine whether CTOs reduce subsequent use of health services in comparison with control patients not placed on an order. Data were collected during the year following the introduction of the new legislation using the Mental Health Information System and a linked database of involuntary treatment under the Mental Health Act. Hospital readmission, length of stay, and contact with services were evaluated. The same authors undertook a further analysis of outcomes for the same patients in a retrospective cohort study. In neither study were specific data collection procedures reported and no information was provided on the implementation of the new legislation. Both studies used data collected over the same time-period, but Kisely et al (2004) controlled for additional potential confounders. The aim was also to examine whether CTOs reduced admission rates, although in this study data were collected from three linked databases: the Police Offenders database of all offences and convictions in

Western Australia, the Mental Health Information System, and the Mental Health Review Board database of all involuntary treatment and readmission rates.

Geller et al (1998) conducted a controlled before and after study in Massachusetts, US. The CTO was a specific, capacity-based, legal extension of existing guardianship laws in Massachusetts and involved the police as an enforcement agent. It was developed for the purposes of the study by two of the authors. Although the specific aim of the study was not stated, the number of psychiatric admissions and inpatient days were compared for a CTO group and four matched non-CTO groups for 6 months before and after the CTO date. Data were collected from the Massachusetts Department of Mental Health Client Tracking System, but data collection procedures were not stated. A 2 year follow-up of these patients was reported in Geller et al (1997).

Hiday and Scheid Cook (1987) reported the findings of a cohort study of a new preventative CTO in North Carolina, US. This study aimed to investigate what was happening to CTO patients under the new law. Data were collected using medical records, interviews with primary clinicians, telephone interviews with patients or their relatives/friends, court records, and arrest records. Readmission, length of stay, contact with services, service intensity, compliance with treatment and social functioning outcomes were evaluated. Data collection procedures were not described. In this report, analyses were restricted to comparing only those who actually began their CTO. A subsequent study by Hiday and Scheid-Cook (1989) described the use and effectiveness of CTOs on the same outcomes using the overall sample. In a third report on these patients, Hiday and Scheid-Cook (1991) described the use and effectiveness of CTO in inducing compliance with treatment in typical 'revolving door' patients only, the target group for whom new CTO criteria were designed. Data collection procedures were not described in any of the papers.

Patients and comparisons

In Burgess et al (unpublished), all psychiatric inpatient admissions in the public sector between July 1991and June 2000 (96 months) taken from the Victoria Psychiatric Case Register (VPCR) were eligible. Of 128,893 discharges, 16,216 resulted in a CTO within 7 days of discharge, 63% of whom were male, 61% of whom had never married, and 57% with a diagnosis of schizophrenia. CTO patients were compared with 112,211 patients identified from the same database who were discharged without a CTO, 51% of whom were male, 46% of whom had never married, and 28% with a diagnosis of schizophrenia. There were both demographic and clinical differences between the two groups, and the CTO group included more than twice as many people with schizophrenia or paranoia than were in the non-CTO group.

In Bursten (1986), all patients came from five state hospitals in Tennessee. Four groups were compared: CTO group 1 included all patients placed on a CTO between July 1981 and March 1983 from 4 state hospitals with CTO programme; Control group 1 was a matched sample from a 5th state hospital which had no CTO programme; CTO group 2 were all patients placed on a CTO from one hospital; and Control group 2 was a matched

sample from the same hospital only. It was not clear what characteristics patients were matched on.

In Geller et al (1998), 19 of the first 23 patients from a single state hospital in Massachusetts who received a CTO between May 1991 and November 1993 were compared with four matched control groups. 63% of CTO patients were male and 57% had a diagnosis of schizophrenia. The first two control groups included patients from same source matched on demographic and clinical variables including gender, diagnosis, age, index admission, number of admissions, and hospital days during pre-treatment period. The analyses used either all 53 matched patients, or the 19 single best matches. The second two control groups were used to try and avoid the problem of regression to the mean, by also matching on the number of admissions and hospital days during the pre-treatment period. Again, the analyses used either all 38 matched patients, or the 19 best single matches. A two year follow-up of these patients is reported in Geller et al (1997), although an extra patient (previously excluded because they were reportedly not discharged during the 6 months following their CTO order) was inexplicably included in the follow-up CTO group, making a total of 20 patients. The first two control groups included either 57 matched patients, or the 20 single best matches, and the second two control groups included either 47 matched patients, or the 20 single best matches.

Hiday and Scheid-Cook undertook several studies of patients selected from the 1226 candidates with civil commitment hearings in North Carolina between July 1984 and June 1985 (6-18 months after the CTO was introduced). In Hiday and Scheid-Cook (1987), the CTO group consisted of 114 patients who actually began their CTO, 57% of whom were male and 57% of whom had a diagnosis of schizophrenia. These were compared with two other groups, one comprising 231 patients who were released, and one of 644 patients who were involuntarily hospitalized. Hiday and Scheid-Cook (1989) presented an analysis of all patients, regardless of whether the CTO actually started, although the numbers of patients included in the analyses are inexplicably considerably lower. In this study, the CTO group included 69 patients (58% male and 86% diagnosed with schizophrenia) who were compared with 12 released patients and 84 patients who were involuntarily hospitalized. Hiday and Scheid-Cook (1991) undertook a later analysis restricted to those patients targeted by the new law ('revolving door' patients – those with severe mental illness, a chronic history, prior dangerousness and medication refusal). Following exclusions (due to voluntary hospitalization, clinician intervention, or because they were never actually seen), the CTO group comprised 31 patients, 54% of whom were male, 56% were single, and 78% had a diagnosis of schizophrenia. The CTO group was again compared with two groups identified from the same source, one group of 11 patients who were released, and the other group of 50 patients who were involuntarily hospitalized. There were no significant differences in demographic, illness, psychiatric history or behavioural variables between the CTO and comparisons groups.

In Power (unpublished), all 208 patients came from the Middle South Sector of Melbourne, Australia. The CTO group comprised 104 patients, the majority of whom had a diagnosis of schizophrenia and nearly 60% of whom were male, who were assigned CTOs between October 1987 and July 1991. CTO patients were compared with 104

patients from the same sector released into the community without a CTO, matched on age, gender, year of discharge and primary diagnosis. Groups had similar clinical histories and were comparable on type of residence and migrant status, but CTO patients had significantly higher rates of violence and were significantly more likely than Controls to have a history of being prescribed depot medication, be single or divorced and to have been on disability pensions.

In Preston et al (2002), all patients subject to a CTO in Western Australia, between November 1997 (the date of implementation of the Mental Health Act (1996)) and November 1998 were eligible. The CTO group comprised 228 patients, 65% of whom were male and 68% of whom had a diagnosis of schizophrenia or psychosis. CTO patients were compared with 228 patients identified from the same source, matched on a subject control algorithm score based on the relative importance for each candidate of gender, ethnicity, diagnosis, length of stay, number of hospital admissions, contact with services and involuntary status in the year prior to index date. Groups were comparable on admissions before index date, but both inpatient bed days and outpatient contacts were significantly higher in the CTO group. Kisely et al (2004) included many of the same patients as Preston et al (2002). Again, all patients subject to a CTO during the same time period were eligible. In this study, the CTO group comprised 265 patients and was compared with two control groups. The first was a group of 265 patients matched on gender, aboriginal ethnicity, age, date of discharge, commencement of episode of care, place of birth, diagnosis and health service use. The groups were otherwise similar in terms of socio-demographic and clinical characteristics or health service use, except that the CTO group had significantly more bed days and outpatient attendances in the previous year. The second control group was 224 consecutive patients matched for date of discharge.

In Vaughan et al (2000), all 246 patients came from Hornsby Ku-Ring-Gai Hospital in New South Wales, Australia. The CTO group comprised 123 patients, all with a diagnosis of psychosis, 68% male, 80% single and 50% living with their parents, who were assigned CTOs between July 1994 and July 1998. Of these, 39 patients received a second CTO during the follow-up period, and 13 a third. CTO patients were compared with 123 patients discharged from the same hospital without a CTO, matched on gender, age within 5 years, number of previous admissions and approximate time of index admission. Groups were also comparable on marital status, living circumstances, and employment. They were not comparable on length of index admission or involuntary legal status during index admission (CTO greater than Control group). There was also some evidence that the Control group were less ill (suggested by shorter duration of index admission), and that they had more insight and were more accepting of treatment (suggested by voluntary status).

(c) Findings

Outcomes

Hospital readmission rates

Burgess et al (unpublished) suggested that CTOs were associated with a significantly *increased* risk of hospital readmission. This was definitely true of patients with less than three previous admissions, although for patients with greater than three previous admissions, the risk of readmission may be reduced. Bursten (1986) reported conflicting findings resulting from the use two comparisons groups. In the first comparison a significantly greater mean reduction in hospital readmissions was found in the CTO group, while in the second comparison, no differences in hospital readmissions were observed. The differences in outcome are difficult to interpret, as it is unclear whether the statistically significant finding is due to the CTO or the choice of control group. Power (unpublished) found no differences between the CTO and Control groups on the number of admissions. Hiday and Scheid-Cook (1989) found no significant differences between the CTO group and those who were involuntarily hospitalized or released. Although a very well controlled study, Preston et al (2002) found no significant differences between the CTO and Control groups on inpatient admissions. However, controlling for additional confounders, Kisely et al (2004) found that CTO patients were significantly more likely to be readmitted. A lack of comparability between groups in Vaughan et al (2000) meant that the effect of CTO on readmission could not be determined. Geller et al (1998) found no significant differences between the CTO group and the demographic and clinical non-CTO matched Control group on admission in the 6 months or at 2 year follow-up (Geller, et al 1997). Some significant differences were observed between the CTO and Control groups in average decrease in admissions throughout the course of follow-up, but the analyses suggested these were likely to have resulted from pre-existing differences and regression to the mean.

Length of hospital stay

Vaughan et al (2000) found no significant differences between CTO and non-CTO groups in length of initial admission. Power (unpublished) found no differences between the CTO and Control groups on time spent in hospital and length of each patients on longest admission. Preston et al (2002) found no significant differences between CTO and Control groups on number of bed days. Hiday and Scheid-Cook (1987 and 1989) found no significant differences between the CTO group and those involuntarily hospitalized or released. Geller et al (1998) found no significant differences between the CTO group and the demographic and clinical non-CTO matched group on number of bed days in the 6 months following the CTO, or at 2 year follow-up (Geller et al, 1997). Some significant differences were observed between the CTO and Control groups in average decrease in bed days throughout the course of follow-up, but the analyses suggested these were likely to have resulted from pre-existing differences and regression to the mean.

Remaining in contact with services

Hiday and Scheid-Cook (1987, 1989 and 1991) found the CTO group was significantly more likely to be in contact with services at 6 months than those involuntarily hospitalized or those released.

Service intensity

A lack of comparability between groups in Vaughan et al (2000) meant that the effect of CTO on service intensity could not be determined. Power (unpublished) found that the CTO group attended significantly more agencies than the Control group. Preston et al (2002) found a significant difference between CTO and Control groups on outpatient contacts but, despite this, no greater reduction in inpatient bed days was observed. Hiday and Scheid-Cook (1987, 1989, 1991) all found that the CTO group attended more frequently and Hiday and Scheid-Cook (1987 and 1991) found that they were more likely to attend than either those involuntarily hospitalized or released.

Compliance with treatment

Between group comparison data on medication compliance were not reported by Vaughan et al (2000). Power (unpublished) found no significant differences between CTO and Control groups on medication compliance. However, Hiday and Scheid-Cook (1987) found there were significantly fewer medication refusals in the CTO group than in those involuntarily hospitalized or released. Although Hiday and Scheid-Cook (1989) provided insufficient information, Hiday and Scheid-Cook (1991) found the CTO group was significantly less likely to have other forms of non-compliance than the other two groups, but report no differences between groups on medication refusal.

Social activities

Hiday and Scheid-Cook (1987, 1989, 1991) all report no significant differences in weekly social interactions.

Aggressive, violent and disturbed behaviour and arrests

Power (unpublished) found no significant differences between the CTO and Control groups on ratings of violence. Hiday and Scheid-Cook (1987) found no differences between the CTO group and those involuntarily hospitalized or released. Insufficient information was provided by Hiday and Scheid-Cook (1989) on violent behaviour and number of arrests, and between group comparison data on behavioural disturbance were not reported by Vaughan et al (2000).

Employment

Hiday and Scheid-Cook (1987) found significantly fewer CTO patients were working at 6 month follow-up than those who were released, but these findings conflict with those of a later publication Hiday and Scheid-Cook (1989) which indicates that more CTO patients were working at 6 month follow-up. These findings are therefore likely to be unreliable, and may result from changes in the definitions of employment used.

Accommodation

Hiday and Scheid-Cook found that significantly more patients in the CTO group who actually began their CTO (1987) or who were revolving door patients (1989) lived at home for the full period of the CTO than those released or those involuntarily hospitalized.

Mental state
Power (unpublished) found a significant difference in symptomatic improvement between the CTO and Control groups.

Overall death and suicide
Power (unpublished) found a difference between the CTO and Control groups in reported deaths, although no individual significance data are reported.

Methodological limitations
Where characteristics that threaten the internal validity of studies can be anticipated, either study groups can be selected to control for these at the design stage, or the factors can be measured in the different study groups to allow them to be controlled for at the analysis stage. Thus, matching comparisons on important characteristics is one potential solution to this problem. Six of the seven studies presented here match for known factors such as patient demographics, diagnosis and historical course of illness with varied success. None of them match for clinical confounding factors such as substance abuse, violence, insight and medication compliance, although a number of studies attempted to control for these factors in the analysis. However, for all studies, residual confounding and other methodological flaws mean that any positive conclusions based on these data may be unreliable. Methodological limitations of each study are presented in Table 5.3a, but some of the main problems associated with this body of evidence are summarized below.

One recurring problem in these studies seems to be the identification of an appropriate control group. For example, Bursten (1986) used two sets of comparisons recruited in from different source populations which resulted in conflicting findings. However, the findings of a difference in one comparison may simply reflect pre-existing differences between groups, while the findings of equivalence in the other may merely indicate something atypical about the source population. Evidence of baseline incomparability between study groups was a feature of many of these studies, preventing robust conclusions being drawn from much of the data. For example, in Burgess et al (unpublished) the main limitation was that factors such as violence, substance abuse, insight, or medication compliance could not be controlled for in the analyses. Therefore, it is possible that more patients who were violent, substance abusers, those with poor insight and those with poor medication compliance were selected into the CTO group, and that this group had a greater propensity for dangerousness resulting in an increased risk of readmission. Some studies recorded before and after CTO data to control for any differences between comparison groups, but in almost all cases where these data were reported, they indicated that all groups improved, indicating possible regression to the mean (eg Geller et al, 1997 and 1998; Preston et al, 2002; Vaughan et al, 2000). Existing data (usually collected for other purposes) were used in all studies, and although none of these studies actually described data collection procedures, many appeared to record exposure and outcome data simultaneously. It is therefore likely that the findings of all studies were open to the effects of potential information biases. Furthermore, there were a number of examples of conflicting data and findings from different analyses of the same samples. Some of these could not be explained, while others may have resulted from

decisions made by investigators about which patients to compare and how to categorise variables of interest. Either way, the findings from these studies are of questionable validity. Follow-up periods ranged from 6 months to 9 years, and it is possible that some of the studies with shorter follow-up periods simply weren't long enough to observe important longer term changes. Finally, although service level outcomes such as hospital readmissions and length of stay were commonly reported in these studies, there was paucity of information about the effects of CTOs on other more important patient level outcomes, such as mental state and symptomatology, quality of life and satisfaction.

(d) Summary

Two large cohort studies indicated differences between comparison groups in readmission rates. Both indicated that CTO patients were *more* likely to be readmitted to hospital. Thus, on the basis of these data, there is no evidence that CTOs keep patients out of hospital. One explanation offered for the increase in readmission in these studies was that increased surveillance of CTO patients ensured that if they deteriorated they were admitted to hospital earlier. However, if this were the case, shorter admissions might be expected, and the available evidence does not support this. In fact, none of the five studies from jurisdictions in both the US and Australia found any differences between CTO and comparison groups in length of stay. Perhaps a more likely explanation for the increase in readmission is that the CTO patients in these studies were simply the most severely ill and had more complex and long-standing problems than patients in the comparison groups. One study did suggest that CTO patients were more likely to remain in contact with services in the short-term, and evidence from three studies suggested that CTO patients were more likely to use services and to use more services than other patients. Evidence from only one study indicated a possible improved compliance with treatment, but the findings from this study were inconsistent.

Where patient level outcomes were reported, these indicated no effect of CTO on social functioning, violence, disturbed behaviour, or arrest. Contradictory evidence from only one study prevents any conclusion about the effects of CTOs on employment. There was some evidence that CTO patients might be more likely to be living at home or with family at 6 months than those involuntarily hospitalized or released. Evidence from one study suggested possible symptom improvement in CTO patients compared with those released without a CTO.

Table 5.3a Characteristics of non-randomized comparative studies of CTO outcomes

Study	Comparisons	Controlled for	Outcomes & follow-up	Limitations
Burgess et al. (unpublished).	1. CTO N= 16,216 versus 2. Control N = 112,211	Adjusted for in the analysis: Number of previous admissions (stratified analysis). Year of discharge. Clinical and demographic variables.	Readmission Follow up of 9 years	Confounding factors possible, including: selection bias – many demographic and clinical differences and more than twice as many people with schizophrenia or paranoia in the CTO group; potential observer/information bias in exposure and outcome data collection (no information in the dataset about specific confounders such as violence, substance abuse, or insight and concerns over the reliability of diagnosis in the data set).
Bursten (1986)	1. CTO Gp 1 (all) N=78 versus 2. Matched non-CTO Gp N=78 3. CTO Gp 2 N=40 versus 4. Matched non-CTO Gp 2 N=35	Matched control groups, but not clear on which factors. Use of two control groups might be thought of as an attempt to control for contextual factors, but findings difficult to interpret.	Readmission Average of 20 month follow-up	Confounding factors likely, including: selection bias - poorly specified eligibility criteria and CTO and control groups selected from different sources, and pre-existing differences between CTO and comparison groups, despite matching (although matching variables unknown); potential observer/information bias in exposure and outcome data collection process.
Geller et al (1998) (Follow-up data from Geller et al 1997 presented in section 4.1)	1. CTO N=19 (N=20 at 2 year follow-up) versus 2. All matched demographic and clinical non-CTO N=53 (N=57 at 2 year follow-up) and 3. Best matched demographic and clinical non-CTO N=19 (N=20 at 2 year follow-up)	Two control groups matched on demographic data including gender, diagnosis, age, and index admission; Two control groups also matched on number of admissions and hospital days during pre-treatment period.	Readmission Length of stay Follow-up of 2 years	Confounding factors likely, including: selection bias - pre-existing differences between CTO and comparison groups, despite matching; potential observer/information bias in exposure and outcome data collection process; other potentially important confounding factors could not be controlled for. Authors acknowledge possibility of regression to the mean. Small sample – possibly inadequate power

	and 4. All matched general and inpatient use non-CTO N=38 (N=41 at 2 year follow-up) and 5. Best matched general and inpatient use non-CTO N=19 (N=20 at 2 year follow-up)			to observe real differences (Type II error).
Hiday and Scheid-Cook (1987) Hiday and Scheid-Cook (1989) Hiday and Scheid-Cook (1991)	Hiday and Scheid-Cook (1987) 1. CTO (patients who began CTO only) N=114 versus 2. Released N=231 and 3. Involuntarily hospitalized N=644 Hiday and Scheid-Cook (1989) 1. CTO N=69 versus 2. Released N=12 and 3. Involuntarily hospitalized N=84 Hiday and Scheid-Cook (1991) 1. CTO (revolving door patients only) N=31 versus 2. Released N=11 and 3. Involuntarily	None	Hiday and Scheid-Cook (1987) and (1989) Readmission Length of stay Remaining in contact Service intensity Compliance with treatment Social interaction Dangerous behaviour Arrests Employment Place of residence Hiday and Scheid-Cook (1991) Compliance with treatment Follow up for all studies was 6 months	Hiday and Scheid-Cook (1987) and (1991) Confounding factors likely, including: selection bias - excluded all those who never actually started CTO, therefore potentially more compliant group. Unexplained differences in numbers in different comparison groups between these studies. Some discrepant and contradictory findings – possibly the result of differences changes in definitions and categories used. Hiday and Scheid-Cook (1987), (1989) and (1991) Confounding factors likely, including: selection bias - generalisability questionable as different from overall population in terms of number of prior hospitalizations; potential observer/information bias in exposure and outcome data collection process and missing data on a number of different outcome measures; other potentially important confounding factors could not be controlled for. Suggestion that effects of CTO

	hospitalized N=50			underestimated because this analysis includes all patients, regardless of whether they actually experienced it. Causal association is not demonstrated.
Kisely et al (2004)	1. CTO (N=264) versus 2. Matched non-CTO N=265 and 3. Matched non-CTO consecutive controls N=224	Matched one control group on demographic characteristics, diagnosis, past psychiatric history and treatment setting, and a second consecutive control on date of discharge from inpatient care. Adjusted for in the analysis: Socio-demographic factors Clinical factors Case complexity Previous psychiatric and forensic history	Readmission Follow up of 12 months	Confounding factors likely, including: selection bias – pre-existing differences between CTO and control groups, despite matching; potential observer/information bias in exposure and outcome data collection process; other potentially important confounding factors could not be controlled for.
Preston et al (2002)	1. CTO N=228 versus 2. Matched non-CTO N=228	Matched on subject control algorithm score (based on gender, ethnicity, diagnosis, length of stay, number of hospital admissions, contact with services and involuntary status in the year prior to index date). Adjusted for in the analysis: Inpatient admissions prior to index date Bed days prior to index date Outpatient contacts prior to index date Marital status Occupational status Residential region	Readmission Length of stay Service intensity Follow up of 12 months	Confounding factors likely, including: selection bias - pre-existing differences (inpatient days and outpatient contacts) between CTO and comparison groups, despite matching on related variables; potential observer/information bias in exposure and outcome data collection process; other potentially important confounding factors could not be controlled for. Improvements in both groups and potential regression to the mean. Possibility of multiple testing.
Power	1. CTO N=104	Matched on age, gender, year	Readmission	Confounding factors likely, including:

(unpublished)	versus 2. Matched non-CTO N=104	of discharge and primary diagnosis. Adjusted for in the analysis: Controlled for number of admissions prior to CTO period	Length of stay Service intensity Medication compliance Violence Average CTO follow-up 62.3 weeks, Control follow-up 58.8 weeks	selection bias - pre-existing differences between CTO and comparison groups, despite matching; potential observer/information bias in exposure and outcome data collection process (retrospective analysis of existing data).
Vaughan et al (2000)	1. CTO N=123 versus 2. Matched non-CTO N=123	Matched on gender, age within 5 years, number of previous admissions and approximate time of index admission. Adjusted for in the analysis: Length of index admission (no. of days subtracted from total length) Depot vs oral medication (subgroup) Length of medication non-compliance (subgroup) Behavioural disturbance (subgroup)	Readmission Length of stay Compliance with treatment Service intensity Behavioural disturbance Average follow up 28 months (range 12-60 months)	Confounding factors likely, including: selection bias – CTO group had greater length of index and control group possibly less ill, but more insightful and accepting of treatment; potential recall and observer/information biases in outcome data collection. Probable post-hoc analyses and data-dredging. Authors acknowledge possibility of regression to the mean.

Table 5.3b Reported outcomes from non-randomized comparative studies – Health service outcomes

Outcome[i] and Study	Available data	Interpretation
1. Health service contact and utilization		
1.1 Readmission		
Burgess et al (unpublished)	**CTO vs non-CTO** Unadjusted analyses: CTO group more likely to be readmitted (RR 1.27; 95% CI 1.24, 1.30; p<0.0001). Trend decreased over time. Adjusting for year and number of episodes: Episode 1 = 1.43 (1.36 – 1.51) Episode 3 = 1.08 (1.02 – 1.15) Episode 5 = 0.99 (0.92 – 1.07) Episode 10+ = 0.82 (0.79 – 0.85) Adjusting for diagnosis: CTO group more likely to be readmitted (RR 1.14; 95% CI 1.11, 1.17) Adjusting for all clinical and demographic variables: CTO group more likely to be readmitted (RR 1.08; 95% CI 1.05 – 1.10) Episode 1 = 1.18 (1.11 – 1.24) Episode 3 = 0.99 (0.94 – 1.05) Episode 5 = 0.92 (0.86 – 0.99) Episode 10+ = 0.81 (0.78 – 0.85)	**Significant difference between CTO and Control groups on readmission; CTO group more likely to be readmitted.** Some evidence that increased risk of admission applies largely to patients discharged to a CTO from a first admission, and that for those with multiple previous admissions it may reduced number of admissions. However, inability to adjust for likely confounders prevents robust evidence-based conclusions from these data.
Bursten (1986)	**CTO group 1 vs matched non-CTO group 1** Significantly greater reduction in hospital admissions in CTO group (41% vs 21%; p <0.05). **CTO group 1 vs matched non-CTO group 1** No significant differences in reduction in hospital admission between the two groups (43% vs 40%).	**Differences between groups not estimable.** Conflicting findings and study flawed.

Geller et al (1998)	**CTO group vs all matched demographic and clinical non-CTO** No statistically significant differences in admissions were observed at 6 months post-CTO or at 2 year follow-up, but at 6 months the CTO group showed a significantly greater decrease in readmissions (average 1.05) compared to an average decrease of 0.28 admissions for the matched Controls (p=0.007). **CTO group vs best matched demographic and clinical non-CTO** No statistically significant differences in admission were observed at 6 months post-CTO or at 2 year follow-up, but at 6 months the CTO group showed a significantly greater decrease in readmissions (average 1.05) compared to only one tenth as much (0.105) for the matched Controls (p=0.018). **CTO group vs all matched general and inpatient use non-CTO** No statistically significant differences in admission or in average change in number of admissions were observed at 6 months post-CTO or at 2 year follow-up. **CTO vs best matched general and inpatient use non-CTO** No statistically significant differences in admission or in average change in number of admissions were observed at 6 or 12 months post-CTO. However, at 18 and 24 month follow-up, matched Controls had significantly fewer admissions than the CTO group.	**No significant differences were found between the CTO and demographically and clinically matched Control groups on admission at 6 months or 2 year follow up.** However, some pre-existing differences between groups at baseline and, although some significant differences were observed between CTO and Control groups in average decrease in admissions throughout the course of follow-up, these were likely to have resulted from pre-existing differences, regression to the mean, and multiple testing.
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Readmission: CTO 34%; Released 27%; IVH 28%. Difference not statistically significant.	**No significant differences were found between CTO and comparison groups on inpatient admissions.**
Kisely et al (2004)	**CTO vs matched non-CTO group and consecutive non-CTO group** CTO group had a significantly higher admission rate: CTO 72%; matched non-CTO Control 65%; Consecutive non-CTO Control 59%; (p=0.03). The CTO group were significantly more likely to be admitted to hospital in the subsequent year, than those in the consecutive control (p value 0.002) and the matched control groups (p value = 0.02). There was no significant difference in admission rates between the matched non-CTO Control and Consecutive non-CTO Control (p=0.32). Adjusting for all potential confounders, CTO group still had an increased chance of being admitted compared with the matched non-CTO group (RR 0.74; 95% CI 0.59, 0.93; p<0.01).	**Significant difference between CTO and Control groups on readmission; CTO group more likely to be readmitted.**

Preston et al (2002)	**CTO vs matched non-CTO group** CTO status did not significantly predict subsequent inpatient admissions (p values not stated). Only admissions and outpatient contacts before index date were significant predictors of inpatient admissions (p<0.00005).	**No significant differences were found between CTO and Control groups on inpatient admissions.**
Power (unpublished)	**CTO vs matched non-CTO group** Mean CTO 0.62 (SD 1.06); Control 0.63 (SD 0.87); p=0.94.	**No significant differences were found between CTO and Control groups on number of admission.**
Vaughan et al (2000)	Mean length of CTO 288 days (SD 210 days). **CTO vs matched non-CTO group** All admissions: 48% CTO and 37% matched non-CTO patients readmitted, almost half in first 3 mos. Involuntary admissions: 61% in CTO group; 33% matched non-CTO group (p=0.005). Between group readmission couldn't be evaluated because of differences in baseline severity. Depot vs oral medication: CTO group readmitted during CTO - 24% depot; 43% oral (p=0.03) Matched non-CTO group readmitted during – 46% depot; 35% oral (ns) **CTO group only** Readmitted during CTO = 38 (31%) (majority during first 3 months) Readmitted following termination = 21 (17%)	**Differences between groups not estimable.** Groups not comparable at baseline.
1.2 Length of stay		

Geller et al (1997) and (1998)	**CTO group vs all matched demographic and clinical non-CTO** No statistically significant differences in bed days were observed at 6 months post-CTO or at 2 year follow-up, but at 6 months the CTO group showed a significantly greater average decrease in bed days compared to an average increase of 2.7 days for the matched Controls (p=0.002). **CTO group vs best matched demographic and clinical non-CTO** No statistically significant differences in bed days were observed at 6 months post-CTO or at 2 year follow-up, but at 6 months the CTO group had a significantly greater average decrease in bed days (68.4) compared to an average increase of 3.7 for the matched Controls (p=0.004). **CTO group vs all matched general and inpatient use non-CTO** No statistically significant differences in bed days or in average change in number of bed days were observed at 6 months post-CTO or at 2 year follow-up. **CTO vs best matched general and inpatient use non-CTO** No statistically significant differences in bed days or in average change in number of bed days were observed at 6 months post-CTO. Although there were no significant differences at follow-up, there was a non-significant trend towards CTO patients having fewer bed days at 12, 18 and 24 months.	**No significant differences were found between the CTO and demographically and clinically matched Control groups on bed days at 6 months or 2 year follow up.** However, some pre-existing differences between groups at baseline and, although some significant differences were observed between CTO and Control groups in average decrease in bed days throughout the course of follow-up, these were likely to have resulted from pre-existing differences, regression to the mean, and multiple testing.
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Among those rehospitalised, there were no significant differences in length of time spent in hospital.	**No significant differences were found between CTO and comparison groups on number of bed days.**
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Number of bed days: CTO 1-29 days 16%, 30+ days 18%; Released 1-29 18%, 30+ days 9%; IVH 1-29 10%, 30+ days 18%. Difference not statistically significant.	**No significant differences were found between CTO and comparison groups on number of bed days.**
Preston et al (2002)	**CTO vs matched non-CTO group** CTO status did not significantly predict subsequent inpatient bed days (p values not stated). Only age, admissions, and inpatient bed days before the index date were significant predictors of inpatient bed days (p<0.04; p<0.00005; p<0.008 respectively).	**No significant differences were found between CTO and Control groups on number of bed days.**
Power (unpublished)	**CTO vs matched non-CTO group** Mean time in hospital (weeks) CT0 3.72 (SD 9.26); Control 2.61 (SD 4.74); p=0.28. Mean length of each patient's longest admission (weeks) CTO 2.81 (SD 6.19); Control 2.13 (SD 4.09); p=0.35.	**No significant differences were found between CTO and Control groups on time in hospital or length of admission.**

Vaughan et al (2000)	**CTO vs matched non-CTO group** Length of initial readmission similar in both groups. **CTO group only** Before vs after CTO - total length of hospitalization significantly lower ($p<0.001$), but no different when length of index admission controlled for.	**No significant differences between CTO and non-CTO groups on length of initial admission.**
1.3 Remaining in contact with psychiatric services		
Power (unpublished)	**CTO vs matched non-CTO group** Losses to follow-up CTO 4 ; Control 11 NB – unclear if this relates to dropout from treatment or dropout from study.	**Difference between the CTO and Control groups in reported deaths, but degree of significance unclear.**
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** CTO group significantly more likely to be in treatment 6 months after their hearings than the other two groups ($p<0.001$) CTO patients were more likely to attend CMHC than other two groups ($p<0.001$).	**Significant difference between CTO and comparison groups on likelihood of contact with services.**
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** In treatment at CMHC at 6 months: CTO 84%; Released 46%; IVH 42%. CTO significantly more likely to be in treatment 6 months after their hearings than the other two groups ($p<0.001$).	**Significant difference between CTO and comparison groups on likelihood of contact with services.**
Hiday and Scheid-Cook (1991)	**CTO vs released vs involuntary hospitalization (IVH)** In treatment at CMHC at 6 months: CTO 94%; Released 46%; IVH 45%. CTO significantly more likely to be in treatment 6 months after their hearings than the other two groups ($p<0.001$), despite the majority of court orders having not been extended 3 months earlier.	**Significant difference between CTO and comparison groups on likelihood of being treatment after 6 months.**
1.4 Service intensity		
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** CTO patients were more likely to attend CMHC ($p<0.001$). Also more likely to attend 6 times or more, although the difference was not significant.	**No significant difference between CTO and comparison groups on frequency of attendance.** However, findings conflict with 1989 study below.

Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Number of visits to CMHC: CTO 1-5 visits 7 patients (18%), 6+ visits 29 patients (76%); Released 1-5 visits 3 patients (27%), 6+ visits 5 patients (46%); IVH 1-5 visits 20 patients (40%), 6+ visits 12 patients (24%). CTO patients attended significantly more often ($p<0.001$).	**Significant difference between CTO and comparison groups on likelihood of frequency of attendance.**
Hiday and Scheid-Cook (1991)	**CTO vs released vs involuntary hospitalization (IVH)** Amount of attendance (more than 6 visits to CMHC): CTO 84%; Released 50%; IVH 25%. CTO group significantly more likely to attend, and to attend more often than the other two groups ($p<0.001$).	**Significant difference between CTO and comparisons groups in likelihood of attendance and frequency of attendance.**
Preston et al (2002)	**CTO vs matched non-CTO group** Subsequent outpatient contacts significantly higher in CTO group ($p<0.00005$). Also outpatient contacts before index date were significant predictors of subsequent outpatients contacts ($p<0.00005$).	**Significant difference between CTO and Control groups on outpatient contacts.** These did not, however, contribute to a greater reduction in inpatient bed days.
Power (unpublished)	**CTO vs matched non-CTO group** CTO patients attended significantly more agencies than the Controls during the follow-up period ($p=0.0001$).	**Significant difference between CTO and Control groups on agencies attended.**
Vaughan et al (2000)	**CTO vs matched non-CTO group** Groups not comparable at baseline in terms of number of services received. **CTO group only** Significantly increased mean number of services in the 2 months prior to hospitalizations during CTOs compared with those pre and post CTO.	**Differences between groups not estimable.** Groups not comparable at baseline.
1.5 Compliance with treatment		
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** Significantly fewer medication refusals in the CTO group than the other two groups ($p<0.001$). Significantly less general non-compliance in the CTO group than the other two groups ($p<0.001$).	**Significant difference between CTO and comparison groups on compliance with treatment.**

Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Refused medication at CMHC: CTO 20 patients (56%); Released 7 patients (88%); IVH 15 patients (47%) No significance test reported. Other non-compliance at CMHC: CTO 22 patients (61%); Released 5 patients (63%); IVH 14 patients (44%). No significance test reported.	**Differences between groups not estimable.**
Hiday and Scheid-Cook (1991)	**CTO vs released vs involuntary hospitalization (IVH)** Medication refusal during 6 months: CTO 64%; Released 100%; IVH 68%. No significant differences between groups were observed on medication refusal. Other treatment non-compliance (eg missed appointments) during 6 months: CTO 60%; Released 100%; IVH 93%. CTO group significantly less likely to have other forms of non-compliance than the other two groups ($p<0.01$).	**No significant differences were found between CTO and comparison groups on medication refusal.** **Significant difference between CTO and comparison groups in treatment non-compliance.**
Power (unpublished)	**CTO vs matched non-CTO group** Mean medication compliance CTO 4.67 (SD 1.37); Control 4.60 (SD 1.26); $p=0.73$.	**No significant differences were found between CTO and Control groups on medication compliance.**
Vaughan et al (2000)	Compliance with depot meds high. Compliance with oral meds could not be determined from case notes. **CTO group only** Significantly greater duration of medication non compliance prior to readmission pre CTO than during CTO (mean days Pre CTO 66.9; During CTO 9.2; $p<0.001$). Significantly shorter duration of medication non-compliance prior to readmission during CTO than post CTO (mean days Post CTO 53.5; $p<0.001$).	**Differences between groups not estimable.** No data on between group comparisons.

[i] **List of outcomes modified from Kisely et al (2005)**

Table 5.3c - Reported outcomes from non-randomized comparative studies – Patient level outcomes

Outcome[i] and Study	Available data	Interpretation
2. Social Functioning		
2.1 General		
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** No differences between groups on weekly social interaction.	**No significant differences were found between CTO and comparison groups on social interaction.**
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Average weekly number of social activities: CTO 1-6 activities 5 patients (39%), 7+ activities 8 patients (62%); Released 1-6 2 patients (100%); IVH 1-6 4 patients (44%), 7+ activities 4 patients (44%). No significance test reported.	**Differences between groups not estimable.**
2.2 Specific – imprisonment, violent/threatening behaviour, police contact, and arrests		
Power (unpublished)	Violence (Overt Aggression Scale 1-4). Mean ratings of violence: **CTO vs Control** CTO 0.81 (SD1.28); Control 0.97 (SD 1.29); p=0.375.	**No significant differences were found between CTO and Control groups on ratings of violence.**
Vaughan et al (2000)	Duration and level of behavioural disturbance of readmitted patients during or after continuation of CTO. Difficult to reliably quantify behavioural disturbance from case notes, but need for involuntary admissions used as a proxy: **CTO group only** Readmissions during CTO were significantly more likely to be voluntary that at index admission (p<0.001) and were of shorter duration than when on index admission (p=0.007). Significantly greater duration of disturbed behaviour prior to readmission pre CTO than during CTO (mean days Pre CTO 38.3; During CTO 9.7; p<0.001). Significantly greater duration of disturbed behaviour prior to readmission post CTO than during CTO (Post CTO 26.2; p=0.01).	**Differences between groups not estimable.** No data on between group comparisons.
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** No differences between groups on dangerous behaviour.	**No significant differences were found between CTO and comparison groups on ratings of violence.**

Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Displayed violent behaviour: CTO 12 patients (32%); Released 2 patients (18%); IVH 14 patients (28%). No significance test reported. Number of arrests: CTO none 4 patients (6%), 2+ arrests 1 patient (2%); Released none 0 patients, 2+ arrests patient (8.3%); IVH none 4 patients (5%), 2+ arrests 1 patients (1%). No significance test reported.	**Differences between groups not estimable.**
2.3 Specific – Employment		
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** CTO patients who began treatment were significantly less likely to be working at 6 months follow-up than those released ($p<0.05$).	**Significant difference between CTO group and comparison groups in number of patients working.** However, findings conflict with 1989 study below, possibly due to changes on the definitions used between studies.
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Employed at 6 months: CTO 11 patients (50%); Released 2 patients (27%); IVH 6 (20%). No significance test reported.	**Differences between groups not estimable.**
2.4 Specific – Accommodation		
Hiday and Scheid-Cook (1987)	**CTO vs released vs involuntary hospitalization (IVH)** CTO patients who began treatment were significantly more likely to be living at home for the full period of the CTO than either of the other two groups ($p<0.001$).	**Significant difference between CTO group and comparison groups in place of residence.**
Hiday and Scheid-Cook (1989)	**CTO vs released vs involuntary hospitalization (IVH)** Living at home during 6 month follow-up period: CTO 11 patients (41%); Released 2 patients (25%); IVH 14 patients (34%). No significance test reported.	**Differences between groups not estimable.**
3. Mental state		
3.1 General		

Power (unpublished)	**CTO vs matched non-CTO group** Significantly more of the CTO group recorded a relative improvement in symptomatic outcome compared with Controls. No individual p value reported. CTO Improved 75; Unchanged 19; Worse 5. Controls Improved 49; Unchanged 20; Worse 18.	**Significant difference between CTO and Control groups in symptomatic improvement.**
3.2 Specific - psychopathology		
4. Quality of life		
4.1 General		
4.2 Self-esteem		
4.3 Victimisation		
4.4 Adverse events		
Power (unpublished)	**CTO vs matched non-CTO group** Death from natural causes, and death by suicide: CTO 1; Control 3, and CTO 0 Control 3 respectively. No individual p value reported.	**Difference between the CTO and Control groups in reported deaths, but degree of significance unclear.**
5. Satisfaction		
5.1 Number of needs for care		
5.2 Patient satisfaction		
5.3 Carer satisfaction		
5.4 Perceived coercion		

[i] **List of outcomes modified from Kisely et al (2005)**

5.4 Exploratory analyses – variables potentially associated with outcome

(a) Introduction

A number of reports have focused on subgroup and regression analyses exploring potential predictors and moderators of associations between CTO use and outcomes of interest. A considerable number of methodological difficulties are associated with such techniques and these are dealt with below. It is important to note that these limitations impact on how the results of exploratory analyses can be interpreted and what conclusions might be drawn from such data. Ordinarily, such analyses might be used to investigate predictors and moderators of significant associations between interventions and outcomes. However, as has already been shown, few statistically significant associations have been identified in the experimental comparative studies that have been undertaken to date. Therefore, these analyses can only be used to generate new hypotheses that might be tested in future research and *cannot* be used to infer causal associations.

Fourteen reports were identified reporting the findings from exploratory analyses of data from trials of CTOs. Twelve of these reports resulted from the North Carolina trial and two related to data from the New York trial (see section 5.2 for full description of both trials). All used some form of subgroup or multivariable regression analysis to investigate the role that different, potentially explanatory, baseline variables (including diagnosis, clinical and socio-demographic factors, caregiver strain, levels of insight, baseline predictors) and study related variables (including CTO and other types of leverage, duration of CTO, existence of a medication order, case management behaviour, hospital readmissions, services used, service intensity, oral/depot injection, treatment adherence, perceived coercion, violent behaviour and substance misuse status during the study period) may play in explaining a variety of different outcomes of interest (hospital readmission, treatment and medication adherence, treatment intensity caregiver strain, criminal victimization, violent behaviour, arrest, quality of life, perceived coercion, homelessness).

(b) Description of studies

Generally, reporting of the New York study was restricted to the analyses of data resulting from direct randomized comparisons of the CTO and Control groups. The exceptions were a logistic regression analysis reported in the main trial publication (Steadman et al, 2001) examining the role of diagnosis and substance abuse in explaining any variation in rehospitalisation, and an analysis of the correlation between treatment adherence and perceived coercion in this sample (Rain et al, 2003). On the other hand, the North Carolina trial reports indicate that the study originally aimed to investigate whether, if CTO was effective in improving outcomes in one or more domains: (i) did it need to be sustained over several months to be effective; (ii) for which client subgroups was it most effective; (iii) to what extent was it perceived as coercive, and what were the potential negative consequences of this coercion; and (iv) what was the role of community-based treatment in the effectiveness of outpatient commitment? Almost all of the twelve reports of this trial present some of the findings from these exploratory

analyses. Largely due to the lack of difference in outcome between the CTO and Control groups, the emphasis in these papers is on the exploratory analyses, often making it difficult to disentangle them from the pure randomized comparison data.

It is important to stress the methodological problems associated with these analyses. Study populations in these reports were sometimes poorly specified and, being subject to missing data and losses to follow-up, the analyses often involved smaller numbers of highly selected patients than would have been used in the original studies. Therefore, many of the datasets might not have been properly representative of the source population. Furthermore, since it is likely that mental health teams would have been most likely to abandon CTOs for patients who were not doing well, it is possible that any positive associations found between CTO duration and outcome were the result of reverse causality (Szmukler and Hotopf, 2001). Most of these reports present the findings of multiple, sometimes post hoc analyses, often involving complex models which looked at the effects of multiple explanatory variables (often categorized in several different ways), and the interactions between these, on multiple outcomes. Using the accepted probability levels to indicate statistical significance ($p<0.05$), one in 20 analyses would result in a statistically significant finding just by chance alone. Therefore, multiple analyses of this kind are at increased risk of resulting in false positive findings (Type I errors). Furthermore, it is well-known that decisions based on subgroup analyses can also be misleading (Davey Smith and Egger, 2001). For example, it can be shown that even if an overall treatment effect is statistically significant at the 5% level, and patients are divided at random into two similarly sized groups, there is still a one in three chance that the treatment effect will be large and statistically highly significant in one group, but irrelevant and non-significant in the other (Ingelfinger et al, 1994). Which subgroup benefits from an intervention is thus often a chance phenomenon. Therefore, although the majority of the RCT data used in the exploratory analyses presented here initially demonstrated no statistically significant differences between the CTO and comparator, based on these figures it is still possible that perhaps one out of three sets of analyses could have provided spurious results, by chance, each time it was stratified by a new variable. Furthermore, in regression analyses, all observed associations should be seen as observational and potentially confounded by other unknown or unmeasured factors and, even though attempts might have been made to limit the possibility, confounding by other factors may still have been possible. As a result of all these methodological problems, the need for cautious interpretation of these data cannot be over-emphasised. These analyses can be seen as exploratory and potentially hypothesis-generating only.

(c) Findings

Baseline characteristics as explanatory variables

Having a personality disorder, being paranoid, substance abuse and previous victimization were all associated with increased odds of victimization, while better functioning and perceived social support were associated with reduced odds of victimization (Hiday et al, 2002). Potential mechanisms involving study period variables were also suggested by these analyses. A diagnosis of psychosis was associated with lower odds of hospitalization (Swartz et al, 1999) and lower perceptions of coercion

(Swartz et al, 2002). Baseline psychosocial functioning and insight into illness were associated with lower rates of service use, while symptomatology was associated with higher rates of service use (Wagner et al, 2003). In African Americans, treatment adherence was poorer (Swartz et al, 2001), service use was lower (Wagner et al, 2003), and perceived coercion scores were higher (Swartz et al, 2002). Being single was associated with higher use of services (Wagner et al, 2003), and being single and having low levels of insight were both associated with higher perceived coercion scores (Swartz et al, 1999), although with the inclusion of case manager behaviour, level of insight was rendered non-significant (Swartz et al, 2002). Higher levels of psychiatric symptoms were also associated with lower perceived coercion scores, although inclusion of case manager behaviour again rendered this association non-significant (Swartz et al, 2002). In the New York patients, substance abuse, regardless of co-occurring psychosis, was associated with higher levels of rehospitalisation (Steadman et al, 2001)

Study period explanatory variables

Increased duration of CTO was associated with reduced hospital readmission (Swartz et al, 1999; Swartz et al, 2001), better adherence to treatment (Swartz et al, 2001; Elbogen et al 2003), reduced caregiver strain (Groff et al, 2004), reduced levels of homelessness (Swartz et al, 2001), lower levels of violent behaviour (Swartz et al, 2001), and reduced risk of victimization (Swartz et al, 2001; Hiday et al, 2002). Extended CTOs were also associated with higher levels of perceived coercion, although this effect was mediated by case manager behaviour (Swartz et al, 2002). In those with psychosis, extended CTO combined with higher levels of services was associated with reduced hospital admissions (Swartz et al, 2001). Controlling for baseline history of violence, extended CTO was associated with lower odds of violent behaviour especially when combined with increased service intensity (Swanson et al, 2000). Controlling for history of arrest and hospitalization, extended CTO was also associated with reduced arrests (Swanson et al, 2001; Swartz et al, 2001). By increasing case manager reminder and treatment adherence and decreasing hospital admissions, extended CTO was associated with improved quality of life (Swanson et al, 2003). Extended CTO was associated with greater treatment intensity (Wagner et al, 2003).

Case managers verbal reminders to patients (to take prescribed mediation and keep scheduled clinic appointments) were associated with increased perceived coercion scores and rendered non-significant the effect of extended CTO (Swartz et al, 2002). Case manager reminders and perceived coercion were both associated with quality of life, even when controlling for psychiatric symptom score (Swanson et al, 2003). Higher numbers of service contacts was associated with lower levels of violence (Swartz et al, 2001), but also higher levels of caregiver strain (Groff et al, 2004).

Treatment adherence was associated with lower reported levels of caregiver strain (Groff et al, 2004) and also lower reported levels of perceived coercion, regardless of type of leverage used (Elbogen et al 2003). Combined improvements in medication adherence and substance abuse were associated with lower levels of violent behaviour (Swanson et al, 2000).

Substance misuse during the study period was associated with poorer treatment adherence (Swartz et al, 2001; Elbogen et al 2003) and increased perceived coercion scores, although controlling for the effects of case manager behaviour again rendered this association non-significant (Swartz et al, 2002).

Data involving the New York trial participants suggested that perceived coercion was associated with increased treatment adherence at first follow-up, but not at any subsequent follow-up (Rain et al, 2003).

(d) Summary

An impressive array of exploratory analyses of associations between explanatory variables and CTO outcomes are available, although the majority stem from data collected in one trial population in a single US jurisdiction. Furthermore, these analyses cannot be used to infer any causal association between explanatory variables and positive or negative CTO outcomes, particularly since the original trials themselves did not find any differences in outcome between the CTO and Control groups. Factors that may be important predictors of outcome include diagnosis and clinical characteristics, substance abuse status, duration of CTO, service intensity and medication adherence. These analyses are, at best, hypothesis-generating, resulting in findings that might be used to inform the design of future controlled research into the effects of CTO.

Table 5.4 Exploratory analyses of the effects of CTOs

Study	Sample, analysis, associations investigated and main findings
Elbogen et (2003) **Outcomes:** **Perceived coercion** **Treatment adherence**	**Sample:** Used North Carolina trial data. Data on 258 patients, therefore excluding 69 losses to follow-up as well as an additional 4 patients for whom data were apparently not available. Furthermore, perceived coercion scores at 12 months were only available for 219 patients. Analyses appeared to include the 46 CTO violent patients, although not explicit in the paper. CTO only N = 85 (33%); CTO and rep payee N = 62 (24%); rep payee only N= 46 (18%); neither CTO nor rep payee N = 65 (25%). Rep payeeship varied naturalistically. **Analysis:** Multiple logistic regression analyses using patients who received neither CTO not rep payee as the comparison. Explanatory variables included: Duration of CTO; Representative payeeship; and Clinical/Demographic factors. **Exploratory analyses:** **CTO alone** No differences in perceived coercion overall compared with those receiving neither form of leverage. **Rep payee alone** No differences in perceived coercion overall compared with those receiving neither form of leverage, although perceptions of financial coercion were significantly greater in this group (OR 3.59; 95% CI 1.56, 8.26, p=0.003). Being assigned a new rep payee during the course of the year independently predicted higher treatment adherence (OR 3.85; 95% CI 1.56, 9.46, p=0.003). **CTO and rep payee** Patients with both CTO and rep payee perceived their mental health treatment to be significantly more coercive overall (OR 3.43; 95% CI 1.49, 7.90, p=0.0037) and more financially coercive (OR 3.82; 95% CI 1.74, 8.38, p=0.0008) than patients who received neither. Patients in this group were also significantly more likely to be given money warnings than patients under no leverage (OR 6.02; 95% CI 2.00, 18.06, p=0.0014). For treatment-adherent patients, neither form of legal mechanism was associated with perceived coercion, whereas patients who were non-adherent perceived legal mechanisms as significantly more coercive (p=0.023). **Duration of CTO** Independently predicted higher treatment adherence (OR 1.47; 95% CI 1.01, 2.13, p=0.05). **Substance use** Continuing alcohol or illicit drug use during the course of the year predicted lower treatment adherence (OR 0.35; 95% CI 0.18, 0.67, p=0.0014).
Groff et al (2004) **Outcome:** **Caregiver strain**	**Sample:** Used North Carolina trial data. 270 patients (82%) had caregivers who provided data at baseline. 93 (28%) patients or caregivers were lost to follow-up. Follow-up data available for 177. Caregiver strain reported subjectively by caregiver. **Analysis:** Regression analysis of factors contributing to caregiver strain. Explanatory variables included: Baseline caregiver strain, Baseline predictors, Duration of CTO; Service intensity; and Treatment adherence. **Exploratory analyses:**

	Duration of CTO CTO group split into those receiving at least 6 months (mean 330 days), versus those receiving less than 6 months (76 days). As the number of days on a CTO increased, subjective experiences of caregiver strain decreased (mean days 150.6; SD 118.1, Pearson correlation with caregiver strain at 12 months -0.25214, p<0.01). Regression analysis controlling for other factors affecting caregiver strain indicated that caregivers of extended CTO recipients reported significantly lower strain (p=0.006). **Service intensity** All service encounters for case management, medication, psychotherapy and other outpatient services summed in a single index. Having high service intensity (>3 visits per month, 53% of sample) throughout the year was associated with higher reports of caregiver strain at 12 months, although finding not independently statistically significant. Regression analysis controlling for other factors affecting care-giver strain indicated that caregivers of those who had high service intensity reported significantly more strain (p=0.01). **Treatment adherence** Composite summary scale for average frequency of adherence with recommended psychiatric treatment across all 3 follow-ups, including attendance at scheduled appointments and medication compliance. Caregivers of those who were treatment compliant were more likely to report reduced caregiver strain, although finding not independently statistically significant. Regression analysis controlling for other factors affecting caregiver strain indicated that care-givers of those who adhered to treatment reported significantly lower strain (p=0.03).
Hiday et al (2002) **Outcome: Victimisation**	**Sample:** Used North Carolina trial data. Data only available for 85 CTO and 99 Control patients. Missing data on 44 CTO and 36 Control randomized patients for this outcome. Data from 223 patients (184 randomly assigned and 39 violent patients not randomly assigned). Data on all variables for 219 patients. **Analysis:** Multivariable logistic regression analyses conducted using staged step-wise models to examine odds of victimisation, controlling for other predictors of victimization as well as for the effects of the non-randomised group with a history of violence. Explanatory variables included: Duration of CTO; Service intensity and its interaction with CTO; Socio-demographic characteristics; Clinical characteristics; Baseline substance use, violence, arrests and previous victimization. **Exploratory analyses:** **Duration of CTO** Risk of victimization decreased with increased CTO duration (Control (N=99) 42.4%; CTO less than 6 months (N=46) 26%; CTO more than 6 months (N=39) 20.5%. Increased number of days of CTO significantly reduced odds (OR 0.10; 95% CI 0.99, 1.00; p<0.05). Analyses suggested that for each additional day on CTO reduced the risk of criminal victimization by about 0.003% (equivalent to 10% reduction over 1 month). **Service intensity its interaction with number of days of CTO:** Neither had a significant effect on odds of victimization. **Socio-demographic characteristics:** Perceived social support reduced odds of victimization (OR 0.87; 95% CI 0.82, 0.93; p<0.001). **Clinical characteristics:** Personality disorder and high level of paranoid symptoms more than doubled odds (respectively OR 2.26; 95% CI 0.97, 5.27; ns and OR 2.04; 95% CI 1.07, 3.90; p=<0.05), while better functioning reduced odds (OR 0.95; 95% CI 0.91, 0.99). **Baseline substance use, violence, arrests and previous victimization:**

	Neither earlier violence nor arrests had a significant effect on odds of victimization. Alcohol and illicit drug use almost tripled odds and previous criminal victimization almost doubled the odds (respectively OR 2.74; 95% CI 1.41, 5.35; p<0.01 and OR 1.88; 95% CI 0.92, 3.85; ns). A second set of analyses suggested that CTO reduced criminal victimisation through improving medication adherence, reducing substance use or abuse, and reducing violent incidents.
Rain et al (2003) **Outcome:** **Treatment adherence**	**Sample:** Used New York trial data. Patients eligible for CTO. 172 were interviewed, of which 55% were subsequently randomized to receive CTO as part of the New York RCT. Unclear whether whole sample was involved in the trial. Patient self-reported adherence compared with case manager ratings of adherence. Presented data from baseline and one-month follow-up interviews only, rather than data from all three follow-ups. **Analysis:** Correlations provided but method of analysis not described. Explanatory variables included: Perceived coercion; and Demographic and clinical characteristics. **Exploratory analyses:** **Perceived coercion** Findings ambiguous. Perceived coercion at hospitalization was associated with increased self-reported treatment adherence at first follow-up (following randomization to CTO or Control) but not at subsequent follow-ups. No association was found between patients' perceived coercion and adherence as reported by service providers. No evidence that high levels of perceived coercion lead to subsequent non-adherence.
Steadman et al (2001) **Outcome:** **Rehospitalisation**	**Sample:** Used New York trial data. 142 patients assigned (CTO 78; Control 64), but only between 57% and 68% followed-up during the year. **Analysis:** Logistic regression analysis. Explanatory variables included: CTO assignment; Diagnosis; Existence of a medication order; Case management type; Substance abuse; and Services. **Exploratory analyses:** Found remarkably few differences. Findings possibly the result of an over-representation of persons with diagnosis of substance use/dependence in the CTO group – but not clear from the data. **Diagnosis and substance abuse** Primary difference between those with a substance use/dependence diagnosis. A significantly higher proportion of substance use patients were rehospitalised (n=40, 58% vs n=27, 37%), regardless of co-occurring psychosis. Logistic regression on diagnosis and group membership found a significant interaction between substance abuse/dependence and group membership in explaining rehospitalisation rates.
Swanson et al (2000) **Outcome:** **Violent behaviour**	**Sample:** Used North Carolina trial data. Analysis of those in a longer term CTO (at least 6 months), about one third of total CTO group. This group included a greater proportion of clients with a history of non-adherence to medication which was indirectly associated with a higher baseline risk of violence (this would work against finding a positive effect from CTO in reducing violence risk). Also included the non-randomised extended CTO recipients with a history of violence (also about one third of total group). **Analysis:** Staged logistic regression with step-wise inclusion used. Explanatory variables included: Duration of CTO; Violence; Demographic and clinical factors; Levels of insight; Service intensity; Medication adherence; and Substance misuse status.

	Exploratory analyses: **Duration of CTO** Controlling for baseline history of violence, extended CTO associated with significantly lower odds of any violent behaviour during the study year (OR 0.42; 95% CI 0.20, 0.088, p=0.05). Controlling for younger age (<40 yrs) odds further reduced (OR 0.35; 95% CI 0.15, 0.79, p<0.01). **Duration of CTO and service intensity** Combination of at least 180 days of CTO with an average of three or more outpatient visits per month significantly reduced violence (OR 0.37; 95% CI 0.14, 0.96, p<0.05). Predicted probability of violence halved from 48% to 24%. **Medication adherence and substance misuse status** Combined improvement in medication adherence and substance abuse status was a significant predictor of violent behaviour (OR 0.81; 95% CI 0.69, 0.97, p<0.05). **Duration of CTO, service intensity, medication adherence and substance misuse status** Those who receive extended CTO, regular services, remain free of substance misuse and adhered to medication had the lowest likelihood of any violence (OR 0.80; 95% CI 0.68, 0.95). Predicted probability of violence 13% vs 53%).
Swanson et al (2001) **Outcome:** **Arrest**	**Sample:** Used North Carolina trial data. Drop-out by 12 months was 69 people (20.8%); 53 (16%) had withdrawn, 7 (2%) had died, and 9 (3%) were lost to follow-up, leaving 262 people. Includes data on the randomized group of 262 patients as well as 46 non-randomised patients with a history of violence. During the 12 month follow-up a total of 52 patients (19.8%) were arrested (more than in the year prior to the study where 40 (15%) had been arrested at least once). 37 (71.2%) were arrested only once, 15 (28.8%) were arrested twice or more. Past arrest was a strong predictor of future arrest. **Analysis:** Multivariable logistic regression analyses. Explanatory variables included: CTO assignment; Duration of CTO; Demographic and clinical characteristics; Medication adherence; and Service intensity. **Exploratory analyses:** **Duration of CTO** Controlling for history of arrest and hospitalisation, reduced arrests during the follow-up period. A significant difference was found between groups; those who underwent extended CTO (6 months or more, average 330 days, n=17) had only a 12% chance of getting arrested compared with 44% in those whose CTOs were not renewed (less than 6 months, average 76 days, n=27) and 47% for those who did not receive CTO (n=19). Reduction in risk of violent behaviour was a significant mediating factor in the association between CTO and arrest (OR 0.49; 95% CI 0.26, 0.92, p<0.05).
Swanson et al (2003) **Outcome:** **Quality of life**	**Sample:** Used North Carolina trial data. 115 (35%) patients missing from follow-up. Number: 216. (CTO 102; Control 114). Using original and modified version of Lehman Quality of Life Index. **Analysis:** Stepwise multivariable logistic regression analyses. Explanatory variables included: Duration of CTO; Case manager reminders; Treatment adherence; Hospital readmissions; Perceived coercion; Treatment intensity; and Demographic and clinical factors. **Exploratory analyses:** **Duration of CTO**

	Increasing days of CTO had a positive indirect effect on 12 month QoL by increasing **case manager reminders** ($p<0.05$) and **treatment adherence** ($p<0.05$) and by decreasing **hospital readmissions** ($p<0.05$). However, it also exerted a negative indirect effect on QoL via increased **perceived coercion**, which was associated with lower QoL ($p<0.01$). Not independently predictive were **homelessness, socio-demographic variables, social support, diagnosis, functioning (GAF), police contact/arrest, violent behaviour and criminal victimization.** **Psychiatric symptom (BSI) score (averaged across follow-up)** Had a strong and significantly negative effect on QoL at 12 months ($b=-0.30$; $p<0.0001$), and controlling for this rendered treatment adherence and hospital readmissions as non-significant. Case manager reminders and perceived coercion remained statistically significant.
Swartz et al (1999) **Outcome:** **Perceived coercion**	**Sample:** Used North Carolina trial data. Some discrepant figures and insufficient data to establish exactly who patients were. **Analysis:** Used multi-stage regression modelling controlling for potential confounders. Demonstrated that CTO patients report significantly higher levels of total MacArthur Admission Experience Scale (MAES) and perceived coercion scores than Control. Explanatory variables included: Socio-demographic characteristics; Levels of insight; Case manager reminders. **Exploratory analyses:** **Marital status, low insight and case manger reminders** emerge as significant independent predictors of coercion. Being single raises the risk of feeling coerced, or conversely, marriage or cohabitation appears to have a protective effect ($p<0.05$). Those who did not regard themselves as ill experienced treatment as more coercive ($p<0.05$). The extent to which case managers reminded patients of the consequences of treatment non-adherence significantly predicts report of coercion ($p<0.05$).
Swartz et al (1999) **Outcome:** **Hospital readmission**	**Sample:** Used North Carolina trial data. Includes data on reportedly randomly assigned patients (CTO 129; Control 135). **Analysis:** Subgroup analyses using rank order tests to compare groups, followed by repeated measures logistic regression analyses. Explanatory variables included: Diagnosis, Duration of CTO; Service intensity; and Demographic and clinical characteristics. **Exploratory analyses:** Extended CTO reduced hospital admissions and total hospital days when combined with intensive treatment, particularly for individuals with psychotic disorders. **Diagnosis** CTO patients with psychosis had a significantly lower odds of having any hospital readmission over the 12 month period than those with affective disorders (OR 0.44: 95% CI 0.21, 0.91, $p<0.05$). **Duration of CTO** Total hospital admissions significantly reduced in those with more than 180 days CTO (less than 180 days N=82, mean 0.91, SD 1.23; more than 180 days N=47, mean 0.45, SD 0.80; Control N=135, mean 1.04, SD 1.55; $p=0.04$). Total hospital days also significantly reduced in those receiving extended CTO (less than 180 days N=82, mean 37.7, SD 61.4; more than 180 days N=47, mean 7.5, SD 15.9; Control N=135, mean 27.9, SD 51.1; $p=0.01$). **Duration of CTO and diagnosis** In patients with non-affective psychotic diagnoses, total hospital admissions were also significantly reduced in those with more than 180 days CTO (less than 180 days N=60, mean 0.95, SD 1.28; more than 180 days N=35, mean 0.34, SD 0.80; Control N=83, mean 1.23, SD

	1.73; p=0.003). Total hospital days also significantly reduced in those receiving extended CTO (less than 180 days N=60, mean 40.1, SD 61.7; more than 180 days N=35, mean 4.6, SD 13.0; Control N=83, mean 32.8, SD 55.7; p=0.001). In patients with affective disorders there were no significant differences in hospital admissions between the brief CTO group, extended CTO group and Control group. **Duration and service intensity** Restricted to the psychotic group only. The number of CTO days received in any given month was associated with a significantly lower odds of any hospital readmission (OR 0.98; 95% CI 0.97, 1.00, p<0.05) in a subsequent month. The beneficial effect of CTO on hospital admission occurred among psychotically disordered patients receiving more days of CTO in combination with higher levels of services; neither extended periods of CTO nor higher levels of service alone were associated with lower odds of admission.
Swartz et al 2001 **Outcomes:** **Hospital readmission** **Medication compliance** **Homelessness** **Violent behaviour** **Arrests** **Criminal victimization**	**Sample:** Used North Carolina trial data. Indicates total sample of 331 patients originally enrolled in the study. Included 46 non-randomised violent patients. **Analysis:** Repeated measures multivariable logistic regression analyses. Explanatory variables included: Duration of CTO; Service intensity; Diagnosis; Substance abuse. **Exploratory analyses:** **Duration of CTO** Rehospitalisation - In those with psychotic disorders, sustained CTO was strongly associated with fewer hospitalizations and fewer days hospitalized (no p value). Medication compliance - CTO more than 180 days improved compliance with medication. Homelessness - CTO of greater than 180 days reduced levels of homelessness. Violent behaviour – Patients in CTO (including non-randomised violent patients who had received at least an initial period of CTO no longer than 90 days) were less violent than those in Control group (no p value). Incidence of any violence was significantly lower among those receiving CTO for a longer duration (27% vs 47%; p=0.049). Arrest - For those with a history of multiple hospitalizations who had also previously been arrested or previously been violent, extended CTO resulted in fewer arrests during follow-up period (extended CTO 12%; brief CTO 44%; Control 47%). Association between extended CTO and reduced arrest partly due to the risk of reducing the risk of violent behaviour. In people with SMI (where history of arrest is plausibly related to illness relapse), CTO appeared to reduce risk of contact with criminal justice system by improving treatment adherence and access to mental health services. However, in those whose criminal behaviour appeared not to be related to relapses, CTO may not reduce arrests. (*overall arrest figures) Criminal victimization - Duration of CTO associated with risk of criminal victimization. Correlation between number of days on CTO and any criminal victimization was -0.194, p<0.01 (completers only analysis). **Service intensity** Violent behaviour - Controlling for frequency of outpatient service contacts, CTO was effective only in those with an average of three or more service contacts per month. For those with fewer than three per month, CTO was not associated with a lower level of violence. Those with more service contacts but not on a CTO did not have a lower level of violence. **Duration of CTO and service intensity** In those who experienced sustained periods (>180 days) of CTO beyond the initial court order and who received relatively intensive outpatient treatment:

	Fewer hospital readmissions – CTO group had on average 57% fewer admissions than Control group (p=0.04). Fewer days in hospital – CTO group hospitalised for 20 fewer days on average than Control group (p=0.01). **Diagnosis, demographic characteristics, duration of CTO, service intensity and substance abuse** Violent behaviour - Controlling for history of violence at baseline - patients under 40 years, those not married or cohabiting, those with less social support, those who were abusing substances, and those who stopped taking their prescribed medication were significantly more likely to be violent. Controlling for these risk factors, those who received sustained CTO and who used service regularly (3 or more per month) were significantly less likely to be violent than those who did not receive sustained CTO and regular services (24% vs 48%) in patients with and without psychotic disorder. Those on sustained CTO who used regular services, concurrently improved on substance abuse and medication adherence had especially low rates of violence (13%). In those not on sustained CTO, who did not use services frequently, who continued to abuse substances and who did not take medication as prescribed had particularly high rates of violence (53%). Criminal victimization - In people with low levels of social support, higher functional impairment and use of alcohol or illicit substances, risk of victimization was about 3% less for each additional 10 days of CTO. Impact of CTO mediated by combined improvement in medication adherence and diminished substance abuse.
Swartz et al (2001) **Outcome:** **Treatment adherence**	**Sample:** Used North Carolina trial data. 73 (22%) patients missing from follow-up. Data available on 258 patients (CTO 100; Control 113) plus 45 CTO violent patients. Patients with baseline history of medication non-adherence significantly more likely to receive extended CTO (40% vs 18.8%, p=0.008) (if anything, likely to have biased against extended CTO, although other potential biases). **Analysis:** Staged logistic regression analysis with stepwise selection used. Explanatory variables included: Duration of CTO; Service intensity; Oral vs depot injection; Medication adherence; and Baseline characteristics. **Exploratory analyses:** **Duration of CTO** Patients in sustained CTO group had significantly higher likelihood of treatment adherence during the year: 65% in the extended CTO group vs 42.4% in the non-renewed CTO group and 48.7% in the Control group (chi square=7.45, p=0.02). Remained significant in multivariate analyses controlling for demographic and clinical covariates and non-random assignment of violent group. **Duration of CTO and service intensity** Combination of at least 6 month CTO and an average of 3 or more outpatient visits per month showed a significant positive effect on treatment adherence (OR 2.9; 95% CI 1.13, 7.46, p<0.05). Including **baseline clinical and demographic characteristics** suggested treatment adherence was significantly lower in African-American (OR 0.36; 95% CI 1.39, 10.99, p<0.05) and or substance abusers (OR 0.41; 95% CI 0.2, 0.85, p<0.05). Controlling for these clinical and demographic predictors increases the odds of treatment adherence in extended CTO recipients (OR 3.91; 95% CI 1.39, 10.99, p<0.01). Including the effects of receiving **antipsychotic medication orally or by depot injection** slightly attenuated the odds of adherence (OR 3.85; 95% CI 1.34, 11.0) and suggests that depot administration independently improves odds of adherence (OR 2.48; 95% CI 1.09, 5.62, p<0.01) because extended CTO increased chances of medication by injection.
Swartz et al (2002)	**Sample:** Used North Carolina trial data. Analyses based on 219 patients (CTO 122; Control 97). Data on 112 patients missing due to withdrawals, loss to follow-up or missing outcome data. Also included 46 non-randomised violent CTO recipients. CTO patients report

Outcome: **Perceived coercion**	higher mean MacArthur Admission Experience Scale scores were significantly higher in the CTO group (CTO 5.51 vs Control 3.80; p=0.002). **Analysis:** Multivariable logistic regression controlling for the effect of non-random assignment (not a significant predictor of coercion). Explanatory variables: Duration of CTO; Case manager behaviour; Socio-demographic characteristics; Diagnosis of psychosis; Substance abuse; Levels of insight; Functioning and symptom severity; Other baseline characteristics. **Exploratory analyses:** **Duration of CTO** Increased days on CTO was associated with a higher coercion score (OR 1.003; 95% CI 1.001, 1.005; p<0.05), equating to an increased risk of perceived coercion of 0.003% per day of CTO. However, the effect of CTO duration became non-significant with the inclusion of case manager behaviour in the model, suggesting that at least some of the coercive elements associated with CTO were accounted for by the case manager's behaviour. **Socio-demographic characteristics** African-American race was associated with higher coercion scores (OR 1.9; 95% CI 1.02, 3.52, p<0.05). Being married/cohabiting was associated with significantly lower reported coercion (OR 0.33; 95% CI 0.015, 0.71, p<0.01). Both remained significant with the inclusion case manager behaviour in the model. **Case manager behaviour** Case managers' reminders and warnings about the consequences of non-adherence to treatment were associated with significantly higher odds of scoring above median on coercion (OR 1.16; 95% CI 1.01, 1.32, p<0.05). Controlling for all other variables, case manager reminders and warnings rendered non-significant the effect of CTO duration on perceived coercion. **Diagnosis of psychosis** A diagnosis of psychosis was associated with significantly lower perceptions of coercion (OR 0.42; 95% CI 0.20, 0.89, p<0.05). **Substance abuse** Evidence of problems relating to substance abuse more than doubled the odds of scoring above median on the coercion scale (OR 2.25; 95% CI 1.23, 4.12, p<0.01), although with the inclusion of case managers in the model, this became non-significant, suggesting case-managers focused their energies on more symptomatic and non-compliant clients. **Psychiatric symptoms (based on BSI self-report)** Higher levels of psychiatric symptoms were associated with higher odds of scoring above median on the coercion scale (OR 1.61; 95% CI 1.07, 2.42, p<0.05), although with the inclusion of case managers in the model, this became non-significant, suggesting case-managers focused their energies on more symptomatic and non-compliant clients. **Levels of insight** High levels of insight were associated with lower odds of perceived coercion (OR 0.83; 95% CI 0.72, 0.97, p<0.05), although with the inclusion of case managers in the model, this became non-significant, suggesting case-managers focused their energies on more symptomatic and non-compliant clients, suggesting case-managers focused their energies on more symptomatic and non-compliant clients. Quality of life score, homelessness, non-compliance and global functioning assessments were not significant predictors in the model.
Wagner et al (2003)	**Sample:** Uses North Carolina trial data on 264 randomised patients only (CTO 129; Control 135; violent patients excluded), then compares brief (N=82) versus extended (N=47) OPC.

Outcome: **Treatment intensity**	**Analysis:** Multivariate staged stepwise logistic regression analyses. Examined total volume of services and subcategories of services including frequency of psychiatrist visits (mostly for medication management), outreach, crisis, case management, outpatient counselling and other services. Rehabilitation services not included due to low frequency. Controlled for rehospitalisation and differences in clinical need. Explanatory variables included: CTO assignment; Baseline characteristics; Duration of CTO; Socio-demographic characteristics; Diagnosis; Clinical characteristics; Medication adherence; Substance abuse; Violent behaviour; Arrest; Level of insight. **Exploratory analyses:** **CTO assignment** Outpatient visits more frequent in all patients with clinical need (regardless of CTO assignment), and among those with extended CTO. **Baseline characteristics** Baseline psychosocial functioning and insight into illness were associated with significantly lower rates of service use (p=0.001 and p=0.03 respectively) and symptomatology was associated with significantly higher rates of service use (p=0.01). **Psychiatric hospitalizations** Psychiatric hospital admissions were associated with significantly higher rates of service use (p=0.04). **Duration of CTO** Significantly higher among patients who had CTO renewed were - frequency of total outpatient visits (Renewed 8.12; Not renewed 5.26; p=0.007) and case management (Renewed 4.21; Not renewed 2.65; p=0.05). Outpatient counselling visits also reported in the text to be significantly higher (Renewed 1.33; Not renewed 0.93) although a p value is not reported to support this conclusion. Furthermore, outreach appears to be significantly higher in the extended CTO patients (Renewed 1.41; Not renewed 0.48; p<0.0001), although this is not reported in the text. Mean rates of outpatient counselling visits and psychiatrist (medication management) visits were substantially, but not significantly higher in extended CTO patients. Multivariate analyses confirmed that extended CTO patients used services significantly more frequently during the study year (p=0.02). Service use was significantly lower in those of African-American descent (RR 0.62; 95% CI 0.40, 0.97), those who were married/cohabiting (RR 0.65; 95% CI 0.42, 1.00), and those with lower psychosocial functioning (RR 0.97; 95% CI 0.95, 0.99), and significantly higher in those who were medication noncompliant (RR 1.71; 95% CI 1.17, 2.50).

Chapter 6

Discussion

6.1 The findings of this review

The objective of this study was to undertake a systematic review of international research relating to the use of CTOs. We began with a series of initial questions, but also wanted to present a complete synthesis of what was known about existing CTOs. We therefore expected a number of more specific additional questions to be identified during the course of the review. The review has been explicitly structured around the questions addressed by primary research on this topic.

(a) Questions addressed by the available evidence

(i) What types of CTOs exist?

There is a wide variety of CTO arrangements in place in different jurisdictions. Both *least restrictive* and *preventative* features of CTO design can be identified, and these help to compare and interpret CTOs across jurisdictions. In the context of the US experience, *least restrictive* CTOs appear to be associated with specific conceptual problems, and may be difficult to use in practice. *Preventative* CTOs avoid some of the conceptual difficulties, but may risk constitutional/human rights challenges. In the US, the development and use of preventative CTOs is now becoming more widespread. In contrast, a whole group of CTO arrangements exist, mainly in Australasian jurisdictions, with both *least restrictive* and *preventative* features. Such CTO arrangements are largely dependent on clinical discretion, and avoid some of the design difficulties of *least restrictive* CTOs and some of the legal controversies surrounding *preventative* CTOs.

(ii) What have been the experiences of other jurisdictions in implementing CTOs?

Evidence from 21 one-off or repeated descriptive and analytic cross-sectional studies provides some insights into how CTOs in other jurisdictions have worked in practice. Studies which report the experiences of implementing CTOs reflect research interests over several decades and across a wide variety of jurisdictions, all with different legislative arrangements and differing levels of community-based services. The early evidence suggested that, for a variety of reasons, so-called *least restrictive* CTOs tended to be little used, and that they generated confusion and antipathy between the courts and the healthcare professionals charged with implementing them. Several studies indicated some sort of 'bedding-in' period during the early stages of CTO use, and it is notable that a large proportion of the CTOs studied were revised in the years following their introduction. Changes in CTO law do not translate simply into changes in practice, particularly where entrenched positions exist amongst those charged with carrying out CTO policy at the level of community mental health services. A disturbing lack of knowledge and considerable disagreement between different professional groups about local CTO arrangements was evident in many studies undertaken in the early years of CTOs use.

Findings from naturalistic studies about the outcomes for patients on CTOs suggest a number of outcomes were improved following CTO assignment. However, all studies had

significant methodological limitations, including potential selection, observation, information and response biases, as well as likely confounding. Many studies involved small sample sizes, and those which compared pre versus post CTO data, where patients effectively acted as their own controls, could not have controlled for the effects of 'regression to the mean'. None of these studies was able to control the environment in which the CTO was provided, thereby ignoring the potentially beneficial effects of other simultaneous service changes. Furthermore, these studies provided only descriptive data rather investigating potentially causal associations between the use of CTOs and specific outcomes. Alternative explanations for most of the findings are likely.

(iii) What are the perceptions of different stakeholder groups about the advantages and disadvantages of CTOs?

Stakeholder perceptions will necessarily be influenced by the local context and CTO provisions and resourcing, and it might therefore be expected that these studies would yield quite different findings. However, there was a high level of consistency between some of the findings from different studies involving different groups. Stakeholder perceptions of CTOs were very mixed, and all stakeholder groups expressed both positive and negative views. There did appear to be differences between stakeholder groups' views on the value of different CTO outcomes, but avoiding involuntary hospitalization was a key priority for patients, family members, clinicians and the general public. In New Zealand, some patients even expressed ambivalence about discharge from CTOs.

Six studies have reported patients' perceptions about CTOs. Except for a highly selected group of patients with long–term experience of CTOs, any improvements in clinical outcomes and patient care experienced by patients tended not to be attributed to the CTO. Patient perceptions about the value of CTOs did not appear to be predicted by the outcome of the intervention, but there was some evidence that perceptions of the fairness and effectiveness of CTOs were influenced by patients' views about their illness and need for treatment. One US and one New Zealand study reported family members' perceptions of CTOs. Although generally in favour, participants expressed concerns about the adequacy of support in the community and information provided to family members. They also thought CTOs might only be helpful for a relatively small proportion of patients, limiting their useful application. Five studies of mental health professionals indicated that psychiatrists held many positive views about CTOs, but they also expressed a number of concerns, including the infringement of patients' rights and a lack of demonstrated efficacy. Factors reportedly determining CTO use by psychiatrists tended not to relate to risk of violence, but rather to need for treatment and patient welfare. This finding was consistent across studies from different jurisdictions and amongst both psychiatrists and other mental health professionals. Lack of knowledge, limited enforceability, discomfort about the use of coercion, concerns about liability and risk, and inadequate resources were all reasons voiced for an unwillingness to use CTO.

(iv) What types of patients tend to be placed on CTOs?

Fourteen cross-sectional studies provided information about CTO patient characteristics. There was remarkable consistency in the characteristics of patients on CTOs across jurisdictions embedded in very different cultural and geographical settings. The

descriptive data indicated that CTO patients were typically males, around 40 years of age, with a long history of schizophrenia-like or serious affective illness, previous admissions, poor medication compliance, aftercare needs, the potential for violence and displaying psychotic symptoms, especially delusions, at the time of the CTO.

(v) How is CTO efficacy defined in research studies?

Although this review identified 28 reports of CTO outcome studies, they actually related to only nine primary studies: two RCTs; seven non-randomised comparison studies. The remaining reports were four further publications of the non-randomised studies, and 14 exploratory analyses and one meta-analysis of data from the two RCTs. There is, therefore, some repetition in the types of outcomes used to measure the efficacy of CTOs. All studies reported readmission to hospital. Other reported health service outcomes included length of stay, remaining in contact with services, service intensity and compliance with treatment. Patient level outcomes with data (of any quality) from at least one study included social functioning, violence/threatening behaviour, arrest, employment, accommodation status, mental state and psychopathology, quality of life, criminal victimization, number of needs for care, carer satisfaction, perceived coercion, and adverse events. No evidence was available on other important patient level outcomes, including self-esteem, patient satisfaction, and general psychosocial outcomes.

(vi) Is there is any evidence that CTOs reduce subsequent inpatient admissions and bed days?

On the basis of all available studies, there is no evidence that CTOs keep patients out of hospital. The New York and North Carolina RCTs found no statistically significant differences between the CTO and Control groups in terms of hospital admissions or length of stay. On the basis of these data, a recent Cochrane review suggested that 85 people would need to receive a CTO in order to avoid one admission. Two large cohort studies found differences between comparison groups in readmission rates. Both indicated that CTO patients were *more* likely to be readmitted to hospital. One explanation offered for the increase in readmission in these studies was that increased surveillance of CTO patients ensured that if they deteriorated they were admitted to hospital earlier. However, if this were the case, shorter admissions might be expected, and the available evidence does not support this. In fact, none of the five non-randomised studies from jurisdictions in both the US and Australia found any differences between CTO and comparison groups in length of stay. Perhaps a more likely explanation for the observed increase in readmission is that the CTO patients in these studies were simply the most severely ill and had more complex and long-standing problems than patients in the comparison groups.

(vii) Do CTOs improve contact with mental health services and service intensity?

It has been argued that CTOs enable closer monitoring and more clinical contact with patients as symptom relapse becomes apparent. Neither RCT found statistically significant differences between the CTO and Control groups' contact with services and service intensity. One non-randomised study suggested that CTO patients were more likely to remain in contact with services in the short-term. Evidence from three other non-

randomised studies suggested that CTO patients were more likely to use services and to use more services than other patients.

(viii) Do CTOs increase compliance with treatment?
Neither RCT found statistically significant differences between the CTO and Control groups in terms of compliance with treatment. Evidence from only one non-randomised study indicated a possible improved compliance with treatment, but the findings from this study were inconsistent.

(ix) Do CTOs result in improved outcomes for patients?
Neither RCT found statistically significant differences between the CTO and Control groups in terms of patient level outcomes including social functioning, offences resulting in arrest, homelessness, general mental state, psychopathology, quality of life, carer satisfaction, or perceived coercion. On the basis of these data, the Cochrane review reports that 238 people would need to receive a CTO in order to avoid one arrest, and 27 people would need to receive a CTO to prevent one episode of homelessness. Where patient level outcomes were reported in non-randomised studies, these indicated no effect of CTO on social functioning, violence, disturbed behaviour, or arrest. One study only provided contradictory evidence about the effects of CTOs on employment. There was some evidence that CTO patients might be more likely to be living at home or with family at 6 months than those involuntarily hospitalized or released. Evidence from one other study suggested possible symptom improvement in CTO patients compared with those released without a CTO.

(x) Summary
Proponents of CTOs argue that they will lead to a decrease in hospital admissions and that they are less coercive than the hospitalization or imprisonment alternatives (Pinfold and Bindman, 2001). There is, so far, no evidence to support this. Despite obtaining data on approximately 20 different outcomes between them, with the exception of one secondary outcome, neither of the two available trials reported any statistically significant differences between the CTO and the Control groups. There were no significant differences between groups on any measures of health service utilization, social functioning or satisfaction at one year. CTO recipients were no less likely to be readmitted to hospital, and they were just as likely to comply with medication as those receiving standard care. The numbers of acts of violence and arrests, and the numbers of people who were homeless by one year were also similar in both groups. In fact, none of the nine experimental studies found evidence suggesting that CTOs reduce either hospital readmission or length of stay, or that they improve compliance. A small number of non-randomised studies suggested possible improvements in contact with services and service intensity, although these might reflect pre-existing differences between groups, or the increased efforts of service providers as much as favourable outcomes for patients. Only patchy evidence exists on the direct effects of CTOs on patients. None of the nine studies found any effect of CTOs on social functioning, offences resulting in arrest, homelessness, general mental state, psychopathology, quality of life, carer satisfaction, or perceived coercion. Contradictory evidence from only one study prevented any conclusion about the effects of CTOs on employment, and the same study suggested that

CTO patients might be more likely to be living at home or with family at 6 months than those involuntarily hospitalized or released. Evidence from one other study suggested possible symptom improvement in CTO patients compared with those released without a CTO. In summary, this review has found very little evidence of positive effects of CTOs in the areas where they might have been anticipated.

(b) Quality of the available evidence

Some might argue that the use of systematic review methodology is inappropriate for the evaluation of such a complex policy area. However, government has repeatedly signalled its intent to use evidence in guiding policy-making (Cabinet Office 1999 and 2000) and there is considerable scope for exploiting the methods and approaches developed to underpin an evidence-base in healthcare. Evidence-based medicine has focused on using a systematic and transparent approach to identifying and synthesising evidence from high quality studies, and organisations such as the ESRC UK Centre for Evidence Based Policy and Practice have made significant progress towards developing a framework for applying these methods to evaluate research relevant to policy. As Boaz and others observe, systematic review methods can be successfully adapted to combine "evidence from quantitative and qualitative studies in order to try and capture the full complexity of an intervention, its impact and its transferability to other contexts" (Boaz et al, 2002). This review is one such effort, taking account of both quantitative and qualitative research and using this spectrum of evidence to answer specific questions relating to different aspects of this policy.

Nevertheless, for various reasons, the general quality of the evidence-base on CTOs is fairly poor. The bulk of the research in this field comes from cross-sectional studies, all with significant methodological limitations, including potential selection, observation, information and response biases, probable 'regression to the mean', and inadequate control of potential confounding factors. Furthermore, these studies provide only descriptive data, rather than evidence of potentially causal associations between the use of CTOs and specific outcomes. As such, the findings from these studies are unlikely to be reliable and are given little weight in this review. Since experimental studies of CTOs have been undertaken, these have been considered in more detail. However, the only two RCTs were both plagued by methodological problems in design and implementation, which may have limited their ability to observe genuine differences between groups. In particular, the New York trial was not able to make a fair comparison, since the only difference between the two groups was the court order, and this was not properly enforced during the trial period. In the North Carolina trial it was not possible to control CTO renewals, so that the randomized comparison could only be based on a relatively short CTO trial period of 3 months. Finally, although many of the non-randomised comparative studies made concerted efforts to control for bias and confounding factors, residual confounding and other methodological flaws were still evident, limiting the reliability of any positive conclusions based on these data. Other problems included the identification of an appropriate control group, potential information biases and apparently conflicting findings in the same study. Although the quality of the evidence in this field limits the strength of any conclusions based upon it, it is noteworthy that there are few discrepancies among the findings of the nine experimental studies on the main health

service outcomes of readmission, length of stay and treatment compliance. In fact, the only discrepancies on these outcomes come from the two largest outcome studies to date, both of which found CTOs to be associated with increased hospital admission.

(c) Comparison with other reviews

To date, this is the most comprehensive review of CTOs that has been undertaken, including many more studies than previous reviews. Four similar reviews have been published over the last 5 years on this topic (Dawson 2005; Ridgely et al, 2001; NASMHPD, 2001; Rolfe 2001). Two of these used a systematic approach (Ridgely et al, 2001; NASMHPD, 2001) and reached broadly similar conclusions to this review. The report produced by the Chief Psychiatrist in Western Australia (2001) following the introduction in 1996 of arrangements for involuntary community treatment in Western Australia was intended to complement best practice guidelines for clinicians. However, it only descriptively summarized many of the early studies identified by this review, was not comparable in terms of aims and methods, drew heavily on the Ridgely et al (2001) review, and did not really attempt to arrive at any conclusions.

One of the first evidence-based reviews of empirical literature on involuntary outpatient treatment (Ridgely et al, 2001) was commissioned by the Senate Committee on Rules for the California legislature, following a proposed expansion of the criteria for involuntary treatment and the creation of a separate statutory provision for involuntary outpatient treatment in California. This review was conducted by RAND, a non-profit institution that helps improve policy and decision-making through research and analysis. It synthesized what was known at that time about the effectiveness of involuntary treatment and of alternatives, and described the experiences of eight other states (Michigan, New York, North Carolina, Ohio, Oregon, Texas, Washington, and Wisconsin) on implementing involuntary outpatient treatment.

The findings of this review, even at that early stage, were similar to those presented here, and the conclusions were equally circumspect about the efficacy of CTOs. Considering the complexity of an underfunded California mental health system, they did not believe there were enough data to determine whether

> *"the development of an involuntary outpatient treatment system in California is worth the additional cost to mental health treatment systems, the courts and law enforcement"*

> acknowledging that

> *"There is some evidence that the combination of court orders and intensive treatment has salutary effects on outcomes in which policy-makers are keenly interested (eg reducing rates of hospitalization, violent behaviour, and arrests). However, there is no direct evidence to suggest that simply amending the statutory language is likely to produce the desired results. Investments would need to be made in developing and sustaining infrastructure for implementation. These investments would need to include funding for the development of intensive*

clinical services and supports, tracking systems for supervision and monitoring, and effective enforcement mechanisms…."

Having reviewed states' experiences and determined that a court order combined with intensive mental health services can be beneficial, these reviewers did not find evidence that a court order is essential for achieving positive results. They also noted that although there was widespread support in principle for CTOs among key informants, many expressed only qualified support for the practice in their own states. In contrast to the paucity of studies on involuntary outpatient treatment, these authors identified and synthesized findings from a number of evidence-based reviews of alternative (albeit potentially more expensive) intensive community treatments, demonstrating the effectiveness of assertive community treatment programmes, as well as other "promising" initiatives such as supported housing and supported employment. Since the RAND review was published, further evidence has accumulated, including that from two large cohort studies both indicating no differences in outcome for patients allocated to CTOs and those discharged without.

The second review was a Technical Report, also undertaken in 2001 by the National Association of State Mental Health Program Directors (NASMHPD) Medical Directors Council in the US. This was intended to provide information and technical assistance to state mental health commissioners and directors, and reviewed research and the policies underlying it. Whilst the authors did not aim to take a position for or against the use of CTOs, like this review, they concluded that findings from research were equivocal and that current research failed to provide strong evidence that CTOs were the best remedy for consumer non-compliance in treatment, noting that

"Regardless of whether a state utilizes involuntary outpatient commitment, funding a strong community-based service provision system is essential to increase consumer engagement in treatment. Ironically, if these services were readily available, the need for coercive measures would likely be minimized or eliminated. At a minimum, if a state decides to implement involuntary outpatient commitment, it must allocate sufficient resources to community-based treatment and monitor the outcomes of the more coercive measures."

Finally, Dawson (2005) undertook a comparative study of the legislation that governs the use of CTOs in several jurisdictions. This review involved interviews with informants within each jurisdiction, and covered the context for the implementation of each jurisdiction's scheme, the extent and scope of that scheme's use, the results of empirical research conducted on its operation, and current debates about its implementation. Despite using a different approach, the findings are largely consistent with this review. Dawson (2005) also noted that different jurisdictions had grappled with similar problems, and there was general agreement with this review about the factors influencing use of CTO by clinicians and about the types of patients subject to CTOs across jurisdictions. Dawson also found evidence for some of the negative consequences associated with CTOs. These included the common complaint that care is dominated by the use of medication, particularly depot medication (disliked by many patients), that there is little

access to alternative forms of care, and that CTOs also tend to be issued for the maximum period permitted by law, with discharge from the order likely to come shortly before an independent review hearing would be held. However, unlike this review, Dawson concludes that almost all studies reveal significant therapeutic benefits for patients, greater compliance without outpatient treatment, especially medication, and reduction in rates of hospital admissions, and that some studies also revealed better relations between patients and their families, enhanced social contacts, reduced levels of violence and self-harm, and earlier identification of relapse. On the other hand, Dawson used a non-systematic approach to synthesizing research in this area, and this is likely to account for the discrepancies in conclusions.

6.2 Generalisability of the evidence-base

Research motives

The relevance of this research to the UK context is difficult to gauge. Currently, we have only limited information about the new proposals for Supervised Community Treatment, and generalizing available research to these proposals is further complicated by the fact that the studies reviewed were undertaken over two decades during which time the criteria and operation of the CTOs themselves were constantly evolving and changing, motivating a variety of different research objectives. For example, when CTOs were first introduced in the US, they were viewed as a less restrictive alternative to hospitalisation, and emphasis was placed on improving patients' civil liberties rather than improving therapeutic outcomes. Any associated loss of freedom was considered to be ethically preferable to compulsory detention in hospital. Thus, early research in this area was prompted not by the question of whether CTOs were more clinically effective than the alternatives, but by interest in whether the perceived ethical value of CTOs was outweighed by their potential adverse consequences. The differences between earlier and later studies of CTOs reflect not only the changes in research interests over time, but also improvements in methodological rigour. Additionally, the bulk of these evaluations was undertaken early in the early life of a CTO, and may reflect what happens during the course of the bedding-in period. Different results might be expected in settings where staff are completely familiar with procedures and workable systems are established.

Relevance of stakeholder perspectives

This review identified a wide spectrum of stakeholder views, even between consumers, across jurisdictions. These views are mirrored by the diversity of perspectives and views submitted to the House of Lords House of Commons Joint Committee on the Draft Mental Health Bill (2005), as well as in two early assessments of stakeholder perceptions in the UK. A cross-sectional survey of 109 UK patients indicated a similar degree of ambivalence to that expressed by patients in jurisdictions where CTOs were already in place (Crawford et al, 2004). Although the majority of these patients (60%) favoured the option of being treated at home or in the community, only one quarter were in favour of changing the law to allow home treatment. The authors concluded that this demonstrated concerns about increased use of compulsory treatment. An earlier report (Pinfold and Bindman, 2001) also captured the opposing views expressed by different stakeholder groups at an open debate in London in 2000. In addition, professional organizations,

leading journals and advocacy groups have all published positions for and against the introduction of CTOs in England and Wales. A recurring observation in the CTO literature reviewed here is the poor workability of CTO arrangements when they are not fully supported by the service providers charged with implementing them, and the importance of stakeholder investment in operationalising CTO legislation should not be underestimated. A view of the current situation in England and Wales regarding CTO has been given by Dawson (2005):

> *"There is still the question of whether [the current proposals] would be widely used by British mental health professionals, in light of their general lack of enthusiasm for the Government's reform package… as, in Ontario, there is a widespread perception that CTOs are being advocated for the wrong reasons: to be seen to 'do something' about violence in the community, even if CTOs will make little impact on rates of violence overall…It seems unlikely that this law reform process will lead swiftly to the successful introduction of CTOs in England and Wales."*

Characteristics of CTO patients

Despite the differences between jurisdictions, the demographic and diagnostic characteristics of patients placed on CTOs were reasonably similar, suggesting they might be a fair indication of the picture in England and Wales should CTOs be introduced. An insight into how psychiatrists might act if CTOs were in place in the UK was provided by an early study of UK psychiatrists (Sensky et al, 1991). Although judgements were made without CTO eligibility criteria being specified, this study looked at the types of patients that would be recommended for a CTO if one existed, controlling for age, sex and diagnosis. Psychiatrists did not appear to nominate patients on the basis of their lifetime histories of psychiatric admissions, substance misuse, criminal charges or dangerousness. The defining features of these patients were that in the previous 12 months, they were significantly less likely to have complied with psychiatric treatment, and significantly more likely to have defaulted from follow-up. Thus, with the exception of forensic history, like many of the studies reviewed here, this study suggested that these psychiatrists were basing their decisions on the patient's recent past. Nevertheless, the relevance of all these descriptions of CTO patients to the current proposals for England and Wales is difficult to judge in the absence more detail about the criteria and code of practice, as well as some indication of the resources that will be made available to support these arrangements.

Descriptions of patients and interventions in outcome studies

As well as the serious methodological problems evident in early studies, many of them failed to clearly describe patient eligibility criteria, the services provided as part of the CTO, or the services available to any comparison groups, resulting in difficulties not only with interpretation, but also with replicating these models in mental health services in other jurisdictions. More recent studies have improved on methodological quality, often providing more details about the patients and interventions, but have nevertheless failed to demonstrate that CTOs result in better health service outcomes or better outcomes for patients, often drawing conflicting conclusions from the available data.

Variability in CTO arrangements and procedures in outcome studies

The vast majority of these studies have been undertaken in the US where CTOs are court-ordered, rather than prescribed by a mental health professional as proposed by UK mental health reforms. Discrepancies between court and clinical decisions are exemplified in the US by the fact that a large number of patients are often sent back to hospital before starting the CTO because clinicians regard it as inappropriate. The context for any UK proposals probably more closely resembles CTO arrangements in Australasia and Canada. The Victoria CTO, for example, embodies both least restrictive and preventative features, and the criteria are the same as for involuntary hospitalization, except for a requirement that involuntary treatment in the least restrictive setting of the community is appropriate.

Decisions about the use of CTOs in other jurisdictions will have been influenced by a variety of factors, some of which might not be directly relevant to the UK context. These include differences in criteria and thresholds for use, the existence of alternative interventions, the adequacy of resourcing, scope for enforcement of the order, concerns about effectiveness of CTOs, concerns about professional liability, concerns about civil liberties, local opposition to CTOs, and the bureaucracy and administration required. Taking the two jurisdictions in which RCTs have been conducted as examples, the commitment to, support for, and resourcing of CTOs was quite different from what is expected in the UK. Both jurisdictions required a finding of deterioration that would result in dangerousness (although in both trials excluded violent patients), both had different criteria for outpatient and inpatient commitment, and both had to establish that the individual was capable of surviving in the community with available supervision from family, friends or others. There were some differences even between these jurisdictions. In North Carolina, it had to be shown that the individual had limited or insufficient ability to make an informed decision to voluntarily seek or comply with treatment, and it was not necessary to show that the CTO was likely to benefit individual. However, in New York it was necessary to show that the individual was unlikely to participate in recommended treatment, and that this lack of compliance with treatment had occurred at least twice in the last 36 months, or had resulted in one or more acts of serious violent behaviour towards self or others, or threats of, or attempts at serious physical harm to self or others. The order also had to be shown to be likely to benefit the individual. Perhaps of greatest significance was that considerable additional resources were allocated to support the introduction and implementation of the New York CTO, providing any new services required, or enhancing and improving existing services as appropriate, and a formal obligation existed to provide these services, with routine auditing to actively monitor this. It is notable that in this trial both the CTO and control groups received these services, and that although there were no differences between them on any outcome, both groups improved significantly on every outcome.

6.3 Gaps in the CTO evidence-base

(a) The need for further evaluation

Although this review has established that there is, so far, no firm evidence to support the introduction of a CTO policy in England and Wales, it has not established that CTOs are completely without benefit for patients in general, or under certain circumstances. In general, the evaluative approaches taken do not distinguish between the different components of CTO arrangements and implementation, each of which may or may not be effective singly or in combination. The methods used have, in fact, usually evaluated the combination of legal, service delivery, organisational and healthcare changes associated with *implementing the policy*, yet conclusions are drawn about the effects and consequences of *the policy itself*. It is very possible that some of the effects of introducing a CTO policy, such as service improvements, increased medication compliance, and so on, result in beneficial outcomes for patients (eg helping to keep them out of hospital, improving their quality of life, and so on), but it also possible that these improvements and benefits can be achieved without the need for legislation. Previous research has often ignored the exact nature of the CTO policy, how it has been implemented, and whether or not specific elements, alone or in combination, are effective. On the basis of much of the evidence reviewed here, there is certainly a case for additional research in this area. Furthermore, many authors have highlighted the need for formal monitoring and outcome evaluation alongside the introduction of new or amended CTO policies in any jurisdiction. Indeed, this was legislatively mandated with the introduction of the New York CTO, and the 3 year evaluation is about to begin.

Aside from the ethical and practical problems already demonstrated by previous CTO outcome studies, the appropriateness of RCT designs for evaluating a policy intervention of this sort has been questioned. If CTOs are thought of not as treatments, but rather as complex mental health policies integral to the organization and delivery of mental health services, then cluster randomized studies involving the random allocation of groups of clinicians, clinical teams or hospitals might be appropriate. However, clinical equipoise would be required to justify a new trial, and that claim can no longer be made. Despite 20 years of investigation, there is little indication that CTOs per se are effective, but there is good evidence for alternative interventions such as Assertive Community Treatment. Thus, quasi-experimental designs, such as the controlled before and after studies identified by this review, which compare CTOs with effective alternatives and control for potential confounders, may be the best approach for any future outcome evaluations. However, many of the outstanding evidence-gaps in this area are likely to require alternative or mixed approaches to further evaluations. Some of the most interesting and compelling findings to date have come from qualitative research in this area, and further qualitative studies would be of considerable value to explore the impact and effects of CTOs on the mental health service providers who implement them, and on CTO recipients and their families and carers.

The appropriateness of research questions, comparison interventions, and outcome measures in CTO research depend largely on the overarching aims of a CTO. Two common purposes of existing CTOs have been identified in this literature:

(1) To provide a least restrictive alternative to hospitalization, where the legal criteria are usually identical to those required for inpatient hospitalization;
(2) To enable early intervention for an individual with a recurring disorder, to prevent hospitalisation, where the legal criteria are broader than those required for inpatient hospitalisation.

In order to achieve either purpose, a variety of possible goals of CTOs have been identified, including prioritizing patients for care, providing more intensive treatment to maintain patients in the community, improving treatment compliance, directing resources so that patients are identified at an earlier stage in relapse, facilitating smooth readmission to hospital, reducing morbidity and mortality, reducing violent and disturbed behaviour, and improving general quality of life. However, the effectiveness of CTOs in achieving either purpose or any of these goals has yet to be established, and some of the most prominent issues for CTO researchers are discussed below.

(b) The need for appropriate comparisons

To date, CTO studies have almost exclusively compared CTO patients with patients discharged from hospital without a CTO, and most have provided few details about the services and supports available to comparison group patients following discharge. Given the coercive nature of CTOs, there is a need to consider whether any potential therapeutic gains might be better delivered by enhancing the quality and assertiveness of community treatment for high risk patients. Alternative interventions that do just that have not yet been compared with CTOs for clinical and cost effectiveness, but are already available to support seriously mentally ill patients living in the community. Ridgely et al (2001) provide an analysis of 23 reviews of the empirical literature on community-based interventions, including assertive community treatment (ACT) and case management, psychological and psychosocial interventions, other supportive interventions, community interventions for people with co-occurring disorders, and medical interventions such as inpatient care and psychopharmacology. This report concluded that there was strongest evidence of the effectiveness of ACT, which offers a multidisciplinary, community-based intervention combining the delivery of clinical treatment with intensive case management (Marshall and Lockwood, 2000). Additionally, although not suitable for all patients, psychiatric advance directives that outline treatment preferences have also been proposed as an alternative to CTOs. Such a legal instrument could enable a competent person with mental illness to specify desired and/or undesired treatment, or to specify a proxy decision maker in the case of future mental health incapacitation. However, as yet, we have no evidence about how these work in practice, or in comparison with CTOs. As the Rand report concluded, *"More research is needed – as is a more evidence-based approach to decisions about which interventions should be supported in public health systems."*

(c) The need for information on different types of outcomes

Hospital readmission, length of stay and other health service outcomes

One of the main goals of CTOs and a key priority for all stakeholders is to prevent readmission to hospital, and while this has been the most commonly reported outcome in CTO research, there is still no evidence that CTOs have any direct impact on hospital readmission. However, the use of readmission as a primary outcome has been criticized,

since although data are easy to collect, they are difficult to interpret. Reductions in readmission rates may simply be a reflection of the number of available hospital beds, and brief or extended readmissions may be necessary for a patient being actively supported in the community. Furthermore, if one of the aims of a CTO is to treat patients in a least restrictive environment, then readmission rates are arguably irrelevant. Other health service outcomes such as contact with services and service intensity might also merely reflect the increased efforts of service providers, bearing no relevance to positive outcomes for patients. Rather than being regarded as endpoints in their own right, the option to readmit, increased service contacts, improvements to levels of services, and improvements in treatment compliance, might all appropriately form part of a treatment plan.

Patient relevant outcomes

If CTOs are intended to improve outcomes for patients, then health service measures such as readmission, length of stay, and contact with services are all arguably incidental to this goal, and patient relevant outcomes should be prioritized in future research. There is a paucity of information about the effects of CTOs on important patient level outcomes such as mental state and symptoms, social functioning, quality of life and satisfaction, and some specific and highly relevant outcomes have been almost completely ignored. For example, some medication side-effects may be intolerable (Parkinsonism, weight gain) affecting quality of life, while others might actually be life-threatening in the longer term. Such considerations are likely to influence compliance with medication, with some patients preferring symptoms to side-effects, and also raise issues about patient capacity to make treatment decisions as discussed below.

Perceived coercion and its effects

We know from the available research that CTOs are associated with higher levels of perceived coercion, but we don't know how this sense of coercion affects the patient's self-image, sense of efficacy and relationships with others. Coercion is involved in many mechanisms designed to enhance treatment adherence thereby decreasing the recurrence of psychiatric symptoms, substance abuse, and dangerous behaviour, and ultimately promoting a more productive and independent life in the community. However, Monahan et al (1995) indicate that the 'consequences of perceived coercion are generally alienating and take the form of anger and depression.' Perceptions of coercion are likely to be mediated by factors such as treatment adherence and the quality of the therapeutic relationship. Exploratory analyses have also suggested that the coercive effect of CTOs are not exclusively exerted by the court order, but also by the behaviour of service providers in response to the order, with case manager 'reminders' themselves being perceived as coercive. Such findings raise questions about the mechanisms by which CTOs achieve both positive and negative outcomes as discussed below.

Therapeutic relationship

There is a need to determine the effect of CTO on the relationship between the service provider and CTO recipient. The implementation of CTOs require that mental health professionals fulfil potentially incompatible roles, becoming both "game-keeper" and "poacher", providing treatment to unwilling patients, and monitoring and enforcing

compliance with this treatment. There are indications that the use of CTOs threaten the therapeutic relationship between healthcare professional and patient, but the impact and duration of such problems have not yet been properly investigated.

Effects of CTOs on families and carers

In view of the need for patients to be adequately supported in the community, it is inevitable that some responsibility for CTO recipients will fall to families and carers where available. It will be important to examine the effects of CTOs on the strength of patient, family and provider relationships, as well as investigating the impact of family and carer involvement in treatment planning on outcomes. Furthermore, it is important to determine the impact of CTOs on recipients' family members and carers. It has been suggested that levels of caregiver strain are inversely related to levels of service intensity, and that there may be a trade-off between alleviating negative outcomes for patients and reducing caregiver strain. This process needs to be better understood in order to identify ways in which caregiver strain might be limited. For example, consideration might be given to providing services such as transportation, intensified case management, and support services for caregivers (although all of these might be provided outside the framework of a court-order).

Renewal circumstances

Although exploratory analyses suggest that CTO duration might have an important influence on outcome, there is little information available on what factors influence renewal, or indicating when patients should be discharged from a CTO. Exploratory analyses suggest that higher risk non-compliant patients are more likely to have their CTOs renewed, and that renewal may be associated with the use of a greater range of services, observations which may seem somewhat circular. Given the intention to prevent future relapse in patients who are likely to have ongoing need for treatment and services, it is difficult to imagine under what circumstances termination of CTOs might become possible. There is no evidence to indicate when CTO termination is appropriate. Who should be left on a CTO, and for how long, remains unclear.

Effect of CTOs on patients following expiry of court order

Little is known about what happens and what supports are necessary following discharge from CTO and concerns have been raised about whether the effect of coercion might impact on subsequent adherence to treatment. It is possible that with improved continuity, some patients will form alliances with mental health professionals that enable voluntary participation in services. However, the measures imposed by CTOs may also prevent the formation of patterns of behaviour that will lead patients to voluntarily seek and actively participate in treatment once the order has expired. One study has examined what happens when CTOs are withdrawn from stable patients, suggesting that approximately half did well and half did not (Munetz et al, 1997). This again indicates the need to better understand for whom CTOs are really necessary and how they might work.

Effect on community-based voluntary mental health patients

Policy changes often affect others for whom the policy is not intended. There has been no research to date that examines the impact of CTOs on voluntary patients living outside of

hospital. Fears about stigma and being committed may be a disincentive to otherwise voluntary patients to participate in mental health treatment voluntarily, perhaps due to fears of being identified and potentially subject to a CTO. Concerns have also been raised that if CTOs become more readily available, they might be applied to otherwise voluntary patients without first attempting non-coercive approaches. Furthermore, even if CTOs do result in any benefit to those patients subject to them, their implementation may draw limited resources away from voluntary patients, resulting in potential deterioration in this group. Concerns have been expressed that voluntary patients will be denied existing services, or the same services as CTO patients, and that professionals will also be encouraged to bypass less coercive means of achieving compliance in order to obtain appropriate services for patients being supported in the community. Thus, with the implementation of a new CTO, additional resources might be required to support not only CTO arrangements, but also services required by voluntary patients in the community. The effect of CTO implementation on the perceptions, behaviour and experiences of voluntary patients in the community demands urgent evaluation, and economic data about the resources necessary to underpin two systems of care are required.

(d) The need to better understand why patients do not comply with treatment

It is notable that in the US, much of the CTO legislation has been prompted by highly publicized cases of violence perpetrated by individuals with mental health problems who had disengaged from community based treatment. However, several of the most prominent cases are worthy of mention. For example, in New York, the catalyst for Kendra's Law was Andrew Goldstein, a man with a long history of treatment for mental disorder, but who had repeatedly sought treatment and been turned away. In North Carolina, Wendell Williamson had been under community-based treatment voluntarily and only disengaged when his psychiatrist retired and he failed to follow-up on a referral to another treatment provider. In both cases, had a CTO been in place at the time of the incident, it would have been unlikely to have made any difference.

One of the ways in which CTOs are expected to keep people out of hospital is by improving compliance with treatment. However, there is little specific consideration in the CTO literature of why individuals needing community-based mental health treatment fail to obtain or receive it, and how applying a court order actually addresses this. Understanding these factors would be important in determining not only how best to facilitate treatment compliance during the CTO, but also following its expiry, and might even obviate the need for a court order at all. The CTO literature indicates that one of the main reasons why certain individuals are at risk of dropping out of treatment and should be targeted is their lack of insight, or awareness of the need for treatment. However, individuals may fail to comply with treatment for a number of reasons, both individual and systemic. The NASMHPD report outlined some potential reasons for poor engagement with services. Individual reasons include having had negative past experiences with the mental health system (including coercion), unpleasant experiences taking psychotropic medications, failure to involve family members and others in treatment planning and continuation of care, and social stigma. Systemic factors that may be important include: poor access to services, including transportation, long waits, confusing eligibility rules and financial barriers; lack of community mental health support

services for prevention, such as affordable housing and employment assistance, as well as early intervention outreach programmes for individuals with recurring disorders; fragmentation of care, requiring individuals to access separate services to meet mental health, substance abuse, physical health and social support needs; lack of sufficient services and effective service coordination for co-occurring disorders; and insufficient consumer and family participation in the design of their mental health systems. Until these problems are better understood and their effects are addressed, the value of imposing a legal intervention alone is questionable.

(e) The need for adequate resourcing of outpatient care

Many proponents of CTOs assert that one way in which they work is by placing pressure on the mental health service system and mobilizing supportive services, outreach, and clinical surveillance, providing timely access to scarce treatment resources to those most in need (Swartz and Monahan, 2001). However, CTO jurisdictions vary widely in terms of the resources provided to support the development and improvement of community mental health services, and in terms of concurrent inpatient facilities. Lack of resources was almost universally acknowledged by mental health professionals as a reason for failing to use a CTO, or its failure to work. For example, Hiday et al (1991) reported that some clinicians reported that therapies and programmes were inadequate due to a lack of funding to support the services and activities necessary to maintain patients in the community, and that poor compliance in rural areas and in poor patients was due to a lack of community group homes, financial support, transportation, and childcare. Ridgely et al (2001) also found disagreement as to whether CTOs are truly 'reciprocal', noting that the burden of monitoring CTOs most often falls to treatment providers, most of whom do not have the resources to provide high levels of supervision.

In the UK, by definition, the patients towards whom SCTs are likely to be targeted will have a history of non-cooperation and poor compliance, and adequately supporting them in the community is therefore likely to be resource-intensive. This review did not specifically address the question of the numbers of patients likely to be placed on a CTO. However, a recent report by the King's Fund addressed these issues to assist the Department of Health and mental health service planners and commissioners in estimating future patient needs in the community and ensuring adequate resources are allocated to meet those needs (Lawton-Smith, 2005). Lawton-Smith cautiously concluded that, assuming people currently subject to guardianship and supervised discharge were transferred to a CTO, up to 1,600 patients along with 200-300 mentally disordered offenders would be placed on orders relatively soon after the new law came into effect, and that the likely use of non-residential orders in England and Wales would build over a period of some years to between around 15 to 30 per 100,000 population, that is between 7,800 and 15,600 people. The report also predicted significant regional variations in the use of orders (as are currently seen with existing powers under the 1983 Act), as well as a year on year increase in the numbers of people on non-residential orders. Whilst the specific arrangements around the use of SCTs are not yet fully known, there is every indication on the basis of current evidence that implementing such proposals will be costly, requiring the commitment of considerable resources.

Concerns have been expressed that CTOs might be used as an alternative to providing a comprehensive package of effective community mental health services. In an environment where mental health services are already stretched, the question arises as to the available resources that might be required to support the introduction, implementation and appropriate use of SCTs in the UK, as well as the resource implications for existing services available to voluntary patients. In the US, Appelbaum (2001) has suggested that legislatures that fail to provide new resources to support such programmes are merely engaging in a sham effort that is unlikely to have any real impact on the care of the mentally ill. It has even been suggested by Dawson (2002) that, rather than providing inadequate support to patients in the community, defensive clinicians may prefer to release patients fully from compulsory treatment at the time of their discharge, simply to avoid future allegations of failure to exercise proper control.

(f) The need to better understand the process by which CTOs might work

There is some suggestion that CTOs may increase contact with services and service intensity, although little to suggest that these improve patient compliance with treatment. However, even where there is limited evidence of positive outcomes associated with CTOs, the mechanisms by which CTOs impact on these outcomes have yet to be elucidated, and the question remains as to whether similar outcomes might be achieved without a court order. For example, observed effects may not in fact be due to the court order itself, but instead to better resourcing of outpatient care, improvements in community services, improved staff training, increased commitment of and better coordination by services and agencies to provide outpatient care, or indeed differential access to care. We currently have very little information about the effects of such measures without a court order. In the New York RCT, the only intended difference between groups was the court order, but this was subsequently not properly enforced. Notably though, this trial indicated that an enhanced services package resulted in significant reductions in rehospitalisation, regardless of whether treatment was court-ordered or not, and the number of multiple rehospitalisations was significantly reduced in the control group only. The North Carolina RCT implemented an 'adherence protocol' to ensure that legal enforcement provisions were used when applicable, but still found no differences between groups. Exploratory analyses of data from the North Carolina trial demonstrated that outcomes were only improved for CTO patients who received intensive mental health services. Thus, it seems that enhanced services and enhanced monitoring may be very important. Whether court orders have any role in improving outcomes for people receiving more intensive services, or whether a court order would have an impact in the absence of those services remains unclear.

(g) The need to establish when and for whom CTOs might work

Whilst we have no firm evidence that CTOs result in any beneficial health service or patient level outcomes, a number of studies have examined the effects of potential predictors of outcome in extensive multivariable analyses, demonstrating that the CTOs may have beneficial effects under certain circumstances and with certain groups of patients (see Chapter 5.4). These analyses suggest that sustained CTOs combined with intensive mental health services may increase treatment adherence and reduce the risk of negative outcomes such as relapse, violent behaviour, victimization, and arrest. Number

of previous admissions, number of admissions during the CTO period, perceived coercion, and medication adherence may also be important influences on outcome. The two most salient factors associated with reduced recidivism and improved outcomes appeared to be intensive mental health treatment and enhanced monitoring for a sustained period of time. CTOs may play a complex role in increasing levels of services, but it is not clear whether they are necessary to improve services, or that they play any role in improving outcomes. Burns (1999) suggested that in CTO research, the important question was whether there is a group of patients who are poorly served by current legislation, who are currently repeatedly subject to compulsory admission, and whose welfare would be better served by a CTO. The answer to this question is not clear from the available evidence. Exploratory analyses have suggested poorer outcomes in patients on CTOs who were single, with low psychosocial functioning and a diagnosis of psychotic disorder, but different types of CTO recipients have not been formally compared.

(h) The need to consider the role of capacity to make treatment decisions

Many of the conceptual problems with CTOs stem from the assumption that some patients with serious mental disorders are not competent to make their own decisions about the need for treatment, weighing the risks and benefits of treatment and the consequences of treatment refusal. Many proponents believe that CTOs are essential for patients who lack insight, constantly relapse, are routinely readmitted under mental health legislation, yet inevitably drop out of follow-up care after discharge. Turner (1994) asserts that this is not because of a failure of aftercare, but because these patients refuse to consider that they are ill or need help. It is certainly true that a frequent feature of severe mental illness is lack of insight, and that many people who lack insight also lack capacity to make treatment decisions. Some studies have even suggested that psychotic patients who do not believe that they are ill can experience symptom improvements with treatment, yet continue to believe that they are not ill (Munetz et al, 2003).

Such lack of insight appears to overlap with the appreciation test for competency developed by Grisso and Applebaum (1995). This tests the ability "to appreciate the significance for one's own situation of the information disclosed about the illness and possible treatments". If a patient fails this test due to lack of insight, they might be deemed as lacking decision-making capacity, and it has been argued that in these circumstances it is the ethical solution to have a mechanism to ensure that such patients get the treatment they need in their own best interests.

Some jurisdictions already have CTOs with built-in capacity criteria (Saskatchewan in Canada, Victoria in Australia, and even Scotland's criteria refers to patient capacity), and a number of authors have suggested that incapacity to make treatment decisions should form part of the criteria for a CTO. For example, in New Zealand, Dawson has argued for a test of 'substantially diminished capacity to consent to treatment for mental disorder' to be added to the existing legal action for all involuntary treatment, thereby improving the harmony of the rules governing consent to psychiatric treatment with other forms of medical care (Dawson, 2005). While the provisions outlined in the 2004 Bill did not indicate that a patient's capacity would be considered as part of the criteria for a non-

resident order, if CTOs are targeted towards 'revolving door' patients who may or may not lack capacity, in order to underpin policy-decisions, there is a need for evidence about whether CTOs are helpful in promoting engagement with services for patients with and without capacity to make treatment decisions.

(i) Summary

In conclusion, there is very little evidence to suggest that CTOs are associated with any positive outcomes and there is justification for further research in this area. In terms of outcomes research, CTOs need to be compared with alternative interventions for which there is already good evidence of efficacy, or which might be more acceptable to patients and service providers. Patient relevant outcomes should be prioritized and interpreted in parallel with health service outcomes. There is also a need to understand the mechanisms by which CTOs might improve outcomes for patients. There is, so far, no evidence that the court order, by itself, has any effect. Furthermore, there is some evidence, and widespread agreement, that CTOs cannot work as intended without adequate resourcing, and it is widely acknowledged that CTOs will not work without the general support of mental health care providers. The impact of these and other factors requires further investigation.

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Appendix I - General problems with different methods and study rating

Cross-sectional studies

Cross-sectional studies are descriptive (like correlational studies and case-reports/series) rather than explanatory studies. They aim to examine outcomes of interest in relation to variables such as person, place and time. It is important to recognise that cross-sectional studies measure exposure and outcome information simultaneously, and it is generally not possible to determine whether one preceded the other, or whether the presence of the outcome affected the level of the exposure. While features inherent in their design usually preclude the ability to test epidemiological hypotheses, descriptive studies can be useful for examining patterns of disease or behaviour as well as formulating research questions. The aim of the study and the source of the sample therefore need to be clear. To avoid selection bias, the population in a cross-sectional study should be well-defined and representative of the source population (eg – using a rigorous process of random sampling so that each individual has an equal chance of being chosen), and to increase confidence that the effects of response bias were limited, the authors should have demonstrated a reasonably high response rate. Again, where multiple analyses have been carried out, it worth checking that both significant and non-significant findings are presented, particularly where analyses have been carried out *post-hoc*.

Cohort studies and controlled before and after studies

Cohort studies and controlled before and after studies can be used to examine associations between exposures and outcomes, or to investigate the consequences of medical interventions (although it should be noted that a controlled trial is the most appropriate for the latter, cohort studies can be used in certain situations). Controlled before and after studies measure outcomes in an intervention group and a non-randomised comparison or 'control' group, both before and after the intervention. Group allocation is usually based on exposure status, for example, CTO versus no CTO. Matching either at the design stage or at the analysis stage is commonly undertaken to control for baseline differences between groups. Multiple exposures and outcomes can be examined. These studies can be retrospective, where existing data are used to investigates associations with a particular outcome, or prospective, beginning with the planned measurement of potential exposures and following up the population to record outcomes. In both cases, studies should be appraised to establish the aims of the study, who was studied, where they were recruited, whether they were representative of the source group and on what basis comparisons were made. Of paramount importance is the accuracy and breadth of the exposure and outcome information and whether all relevant variables have been measured. Depending on how data is collected, observer, information and recall biases are all potential problems with these sorts of studies. A common problem with studies of this sort is also loss to follow-up – this not only affects the power of the study to observe genuine associations, but can also result in imbalances between groups due to differential attrition. It is also important examine the adequacy of the length of follow-up – it is often too short. These studies can involve the investigation of many potential associations and it is worth considering whether statistically significant findings might be

the result of multiple significance testing. Finally, alternative explanations for any observed associations must be considered.

Qualitative studies

Whilst quantitative research seeks to use reliable data to draw conclusion through a process of deduction, qualitative research aims to explore and gather information to generate ideas and hypotheses through 'inductive reasoning'. The validity of the 'data' in a qualitative study is therefore paramount, and is greatly improved if a combination of methods is used (eg – using both in-depth interviews and focus groups, often referred to as 'triangulation') and if the data is independently analysed by more than one person. Qualitative research often involves an 'iterative approach' (modification of research methods and hypotheses in light of incoming data), a concept strongly discouraged in quantitative methods. Therefore, one of the first things to establish is whether a qualitative approach was appropriate, that is, did the study ask how or why something was taking place (eg - how people experience illness) and a clear research question will help establish this. Due to the nature of qualitative research, it is difficult to develop a fully comprehensive and universally applicable critical appraisal checklist, although there are some basic principles that are helpful in determining the validity of a study. The method of sampling used (for subjects and setting) must be adequately described to allow consideration of whether the investigators studied a representative range of individuals and settings relevant to their question (eg – be aware of the use of 'covenience samples'). It is important to recognize that there is no way of avoiding or controlling for observer bias in qualitative research, and it is essential that the researcher has provided a clear statement of their own background and perspective and taken account of this in the analysis, considering how it could have influenced the results. The methods used to collect the data need to be described in detail (eg field observation, interview). A systematic approach should have been used to analyse the data (eg – content analysis) and efforts should have been made to identify and explore data that contradicted the majority findings. Ideally, the data analysis should have been corroborated by more than one investigator. The results should look credible and justify the conclusions.

Clinical trials

Trials compare the efficacy of treatments, and the study question (preferably stated as a hypothesis) should state explicitly the types of patients, interventions and particularly the outcomes that are of interest. Information about the source and nature of the patients need to be fully described, not only to help the reader decide the extent to which the study findings can be applied in practice, but also because the choice of patients can influence the size of any observed treatment effect. To ensure a fair comparison is made and prevent systematic differences between groups, patients allocated to the different treatment groups must be similar at baseline. If sufficient numbers are involved, the use of random allocation procedures should ensure that the groups are balanced in terms of factors that might influence outcome, both known and unknown to the investigators. The randomisation process should have been carried out in such a way that the groups to which patients are being allocated is concealed from the investigators. Except for the

intervention under study, the treatment received by patients in the trial should be identical, and this is made easier if the staff and study personnel are 'blinded' the group assignment (to prevent performance bias). All patients need to be accounted for to establish that systematic differences have not been introduced by systematic differences in dropout or missing information (attrition bias). To protect the balance between groups introduced at randomisation, the statistical analysis should have been carried out using an intention to treat approach. It is worth remembering that a single randomised trial rarely provides sufficiently robust evidence to recommend changes to clinical practice or within health policy decision-making.

Methodological rating of cross-sectional studies

1. Did the study address a clearly focused question?
Summarise in table (Study aim)

2. Who has been studied and how were they recruited (selection bias)?
Summarise in table (Sample and Limitations)

3. How accurate was the information collected?
Summarise in table (Method and Limitations)

4. What was the response rate and is the data complete?
Summarise in table (Limitations)

5. Was statistical significance data provided (incl. confidence intervals, p-values)?
Summarise in table (Main findings)

Methodological rating of cohort and controlled before and after studies

1. Did the study address a clearly focused question (including target population, exposure/ intervention and outcome)?
Summarise in table (Study aim)

2. Evidence of selection bias? Who has been studied, how were they recruited (same source), were they appropriate, and were groups comparable at the start (including matching/stratifying)?
Summarise in text and table (Sample and Limitations)

3. Evidence of recall, observer, or information biases? When and how accurately was exposure measured, and was it recorded independent of outcome (was it retrospective/prospective; did they blind)?
Summarise in text and table (Method and Limitations)

4. Evidence of recall, observer, or information biases? How accurately was outcome measured and was it recorded independent of exposure (did they blind)?
Summarise in table (Method and Limitations)

5. Were potential confounders controlled for in the analysis?
Summarise in table (Controlling for?)

6. Is there any indication that attrition could have resulted in an imbalance between groups?
Summarise in table (Limitations)

7. Was there evidence of multiple testing in the analyses?
Summarise in table (Limitations)

8. Are alternative explanations considered?
Summarise in table (Limitations)

Additional questions:
How long was the follow-up and was it adequate?
Summarise in text.

Methodological rating of a qualitative study

1. Was there a clearly formulated question (could have been extended or refined in view of accumulating findings)?
Summarise in table (Study aims)

2. Was the sampling strategy (the subjects and the setting) clearly defined and justified?
Summarise in table (Notes)

3. Has the researcher critically examined their own perspective, role, potential bias and influence?
Summarise in table (Notes)

4. What methods did the researcher use for collecting data (eg – field observation, interview) and are these adequately described?
Summarise in table (Method and Notes)

5. What methods did the researcher use to analyse the data and what quality control measures were implemented?
Summarise in table (Method and Notes)

Methodological rating of RCTs

1. Was the CTO specified? Yes/No
Summarise in text.

2. Was the source and type of patients properly described? Yes/No
Summarise in text.

3. Was the randomisation procedure described? Yes/No
Summarise in table (Randomised).

4. Was the allocation concealed from the trialists? Yes/No
Summarise in table (Allocation concealment).

5. Were the groups similar at the start of the trial? Yes/No
Summarise in table (Comparability).

6. Was the primary outcome measured blind? Yes/No
Summarise in table (Blinding).

7. Apart from the intervention, were the two groups treated equally? Yes/No
Summarise in table (Implementation problems).

8. Were all patients who entered the trial accounted for? Yes/No
Summarise in table (Reporting).

9. Was an intention to treat (ITT) analysis undertaken Yes/No
Summarise in table (Analysis)

10. Generalisability of patient group? Yes/No
Summarise in table (Generalisability)

Yes = 1; No = 0. Total available score 10/10.

Additional questions:
Were the outcome measures specified a priori?
Summarise in text.

Were statisticians blind and was there a test for the effectiveness of any blinding?
Summarise in text.

What was the attrition rate?
Summarise in text.

How long was the follow-up?
Summarise in text.

Appendix II - Methods used in systematic review

Preamble

Below we describe the method by which the articles were identified and included in the review. We also include details of how data were extracted from articles and how methodological rigour was assessed and summarized. Due to the complex and interdisciplinary nature of this topic, as well as the fact that no standardized terminology can be identified, systematic searches are not straightforward. The approach we have taken is as comprehensive and rigorous as is practicable. Although it always remains possible that relevant papers have been missed, cross-checks with other country specific reviews indicate that we have identified and critically appraised a much greater number of studies than have previously been included in reviews of this topic.

1. Objective

To undertake a systematic review of national and international research relating to the use of CTOs.

2. Target studies

According to this definition, reports of data-based empirical studies on CTOs, undertaken in any country, published or unpublished, were included in the review. We included a broad range of reports, including audits, cross-sectional studies, qualitative studies and (to provide context and a framework for discussion) editorials, commentaries and conceptual or legal analyses. We imposed no restrictions on language, year, study quality or study sample size. Studies where all of part of the data was collected prior to the actual introduction of a CTO were included. For the purposes of the overall report, we aimed to identify all empirical papers on CTOs, as well as papers relevant to conceptual and legal aspects of CTO.

Inclusion criteria were:

- Any paper which addressed CTOs as defined in the Introduction. That is, any legal framework for community mental health treatment which:
    1. Is authorized by a statute
    2. Is located in the community with no *necessary* tie to hospitalization
    3. Is enforceable
- Papers that were relevant to:
    1. international comparisons of CTO arrangements
    2. descriptive research on CTOs
    3. experimental research on CTO
    4. discussion of the conceptual, legal or ethical issues around the design and use of CTOs.

Exclusion criteria were:

- CTOs applied to patients from criminal justice courts rather than civil courts.
- CTO applied to patients with substance abuse *alone.*

- Financial analyses of CTO.
- Case reports.

3. Search strategy

A combination of methods was used to identify the relevant studies. In summary, comprehensive search strategy for the major databases (PsycINFO, Medline, EMBASE) was developed, piloted and undertaken with the assistance of a librarian.

References identified by the electronic searches were de-duplicated and the remainder downloaded into bibliographic software. These were then scanned by the librarian and all references which were obviously not relevant to this review were excluded. One of the reviewers (GO) then read the titles and abstracts (where available) of references in the resulting electronic file. On the basis of the information available, where a study appeared to meet the inclusion criteria, or where a final decision could not be made, full copies of the articles were obtained and assessed by two reviewers (RC and GO). Doubts over relevance to the review were resolved through discussion. In addition to searching electronic databases, relevant articles were identified from the bibliographies of included articles scanned by two reviewers (RC and GO), contact with experts and those working in the field, and through sources of grey literature (including theses, dissertations, other stakeholder organizations, and where possible, supplementary searches of the websites of professional and government organisations in jurisdictions where CTOs are already in place).

Electronic database searches

Relevant research articles were identified from a systematic search of electronic databases. These comprised PsycINFO (1967 to 2005), Medline (1966 to 2005) and EMBASE (1980 to 2005).

The list of search terms evolved as our familiarity with the literature developed. CTOs are known as different things is different jurisdictions. Our final list of search terms was based on the following:

Community treatment orders
CTO
Mandatory outpatient
Involuntary outpatient
Outpatient commitment
Involuntary commitment
IOT
Assisted outpatient treatment
Conjunction of ‘civil commitment’ and ‘OPC’

Database: EMBASE, Ovid MEDLINE(R), PsycINFO
Search Strategy:
---

1 (community adj treatment adj order$).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
2 CTO$.mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
3 (mandat$ adj outpatient).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
4 (outpatient$ adj commitment).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
5 (involuntar$ adj outpatient$).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
6 (involuntar$ adj commitment$).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
7 IOT.mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
8 (Assisted adj outpatient adj treatment).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
9 aot.mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
10 ((civil adj commitment) and OPC).mp. [mp=ti, ab, sh, hw, tn, ot, dm, mf, nm, tc, id]
11 or/1-10 (3545)

Reference lists from prior major systematic reviews of CTO

We performed cross-checks of the reference lists of identified primary and secondary research articles from the USA, Canada, UK, Australia, New Zealand and Israel.

Personal communication with experts

These experts were identified from the investigators' prior knowledge and on the basis of identified authorship (see list of acknowledgements).

Legal details of CTOs

Where legal details of CTOs in specific jurisdictions were not available from articles, these were searched for using the 'Google' search engine. Sources are given in the tables of Chapter 2. For countries where there were many different CTOs in different jurisdictions (such as the USA and Australia) we selected examples of CTOs from each country, based on:

- Whether the CTO throws light on general issues of CTO design and/or international comparison.
- Whether the CTO has quantitative or qualitative research relating to it.
- Whether the CTO has exceptional features (e.g. Wisconsin USA)
- Recent 'preventative' CTO designs in the USA (e.g. New York, California, Florida)

4. Selection of relevant studies

The results of electronic database searches were cleaned and scanned applying broad inclusion criteria. All remaining references were loaded into Reference Manager Software for subsequent indexing. Full articles were obtained, a number of which were

subsequently rejected. Bibliography checks of the remaining articles were undertaken and contact was made with experts in the field. Data-based reports were identified from the final group of studies and the topics dealt with were coded in Reference Manager.

5. Data extraction

Initially study information was extracted from the full text article by two reviewers using a standardised data extraction form designed to record the aims and characteristics of the study (GO and AMM). A large proportion of studies were subsequently data extracted by a third reviewer (RC) to check for accuracy. Studies were grouped according to their aims and methods and were then assessed on basic quality issues.

6. Data synthesis/summary

Extracted data were incorporated into tables describing the study aims and methods, the study findings and indicating the main limitations of the study. Accompanying text summarized the available literature around the common questions addressed and outcomes evaluated. Where appropriate, we have presented mean values with ranges and details of any statistical tests undertaken by the authors. Heterogeneity between studies, the nature of the study designs employed, and the quality of the resulting data meant that a formal meta-analysis would not have been appropriate. The exception to this was the two RCTs, which were already incorporated into an included systematic review and meta-analysis.

Methodological assessment was undertaken using adaptations of critical appraisal checklists for different study designs (RCTs, cross-sectional, cohort and controlled before and after studies, and qualitative studies) taken from Churchill (2003) (see Appendix I). A numeric score was only produced for the methodological assessment of RCTs. For these studies, one point was awarded for each methodological condition met, and a score out of 10 was calculated. Otherwise methodological information was summarized in the tables and text. For other study types of study, important methodological information was either summarized in the text or tabulated alongside the description of each study (as specified in Appendix I).

For Chapters 1, 2 and 6, we have drawn on the editorial, commentaries, conceptual and legal analyses for purposes of contextualization and thematisation, but have not included these in the empirical studies (Chapters 4 and 5).

7. Results

Using the methods outlined above, electronic database searches initially generated 3,545 references, resulting in 767 articles following cleaning. After initial scanning of these, 192 full articles were obtained. Further examination resulted in the selection of 178 articles. Bibliography checks of these articles and contact with experts in the field yielded a final total of 244 references. Of the 244 records identified, 72 were subsequently found to be data-based empirical studies relating to the use of CTOs in a number of different jurisdictions.