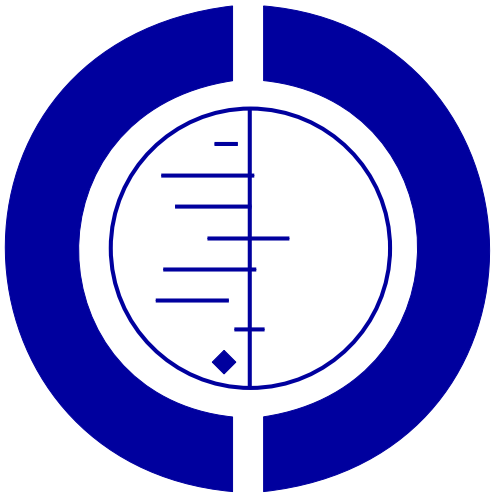
Compulsory community and involuntary outpatient treatment for people with severe mental disorders (Review)

Kisely S, Campbell LA, Preston N



THE COCHRANE COLLABORATION®

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2005, Issue 3

http://www.thecochranelibrary.com

TABLE OF CONTENTS

Compulsory community and involuntary outpatient treatment for people with severe mental disorders (Review)

Kisely S, Campbell LA, Preston N

Status: *New*

This record should be cited as:
Kisely S, Campbell LA, Preston N. Compulsory community and involuntary outpatient treatment for people with severe mental disorders. *The Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD004408.pub2. DOI: 10.1002/14651858.CD004408.pub2.

This version first published online: 20 July 2005 in Issue 3, 2005.
Date of most recent substantive amendment: 20 May 2005

ABSTRACT

Background
There is controversy as to whether compulsory community treatment for people with severe mental illnesses reduces health service use, or improves clinical outcome and social functioning. Given the widespread use of such powers it is important to assess the effects of this type of legislation.

Objectives
To examine the clinical and cost effectiveness of compulsory community treatment for people with severe mental illness.

Search strategy
We undertook searches of the Cochrane Schizophrenia Group Register to 2003 and Science Citation Index. We obtained all references of identified studies and contacted authors of each included study.

Selection criteria
All relevant randomised controlled clinical trials of compulsory community treatment compared with standard care for people with severe mental illness.

Data collection and analysis
We reliably selected and quality assessed studies and extracted data. For binary outcomes, we calculated a fixed effects risk ratio (RR), its 95% confidence interval (CI) and, where possible, the weighted number needed to treat/harm statistic (NNT/H).

Main results
We identified two randomised clinical trials (total n=416) of court-ordered 'Outpatient Commitment' (OPC) from the USA. We found little evidence to indicate that compulsory community treatment was effective in any of the main outcome indices: health service use (2 RCTs, n=416, RR readmission to hospital by 11-12 months 0.98 CI 0.79 to 1.2), social functioning (2 RCTs, n=416, RR outcome 'arrested at least once by 11-12 months' 0.97 CI 0.62 to 1.52), mental state, quality of life (2 RCTs, n=416, RR homelessness 0.67 CI 0.39 to 1.15) or satisfaction with care (2 RCTs, n=416, RR perceived coercion 1.36 CI 0.97 to 1.89). However, risk of victimisation may decrease with OPC (1 RCT, n=264, RR 0.5 CI 0.31 to 0.8, NNT 6 CI 6 to 6.5). In terms of numbers needed to treat, it would take 85 OPC orders to prevent one readmission, 27 to prevent one episode of homelessness and 238 to prevent one arrest.

Authors' conclusions
Based on current evidence, community treatment orders may not be an effective alternative to standard care. It appears that compulsory community treatment results in no significant difference in service use, social functioning or quality of life compared with standard care. There is currently no evidence of cost effectiveness. People receiving compulsory community treatment were, however, less likely to be victim of violent or non-violent crime. It is, nevertheless, difficult to conceive of another group in society that would be subject

to measures that curtail the freedom of 85 people to avoid one admission to hospital or of 238 to avoid one arrest. We urgently require further, good quality randomised controlled studies to consolidate findings and establish whether it is the intensity of treatment in compulsory community treatment or its compulsory nature that affects outcome. Evaluation of a wide range of outcomes should be included if this type of legislation is introduced.

SYNOPSIS

The evidence found in this review suggests that compulsory community treatment may not be an effective alternative to standard care.

We examined the effectiveness of compulsory community treatment for people with severe mental illness through a systematic review of all relevant randomised controlled clinical trials. Only two relevant trials were found and these provided little evidence of efficacy on any outcomes such as health service use, social functioning, mental state, quality of life or satisfaction with care. No data were available for cost and unclear presentation of data made it impossible to assess the effect on mental state and most aspects of satisfaction with care. In terms of numbers needed to treat, it would take 85 outpatient commitment orders to prevent one readmission, 27 to prevent one episode of homelessness and 238 to prevent one arrest.

BACKGROUND

Enforced treatment for people with severe mental disorders in the community is used in many countries, including Australia, Israel, New Zealand, the United Kingdom and the United States (Wilk 1988, Torrey 1995, McIvor 1998, Kanter 1995). In the USA more than half the states have some form of compulsory community treatment (Torrey 1995) and in Australasia similar provisions exist in the states of New South Wales, Victoria and Western Australia and also in New Zealand (Torrey 1995, Dedman 1990, Mulvany 1993). Initiatives in the United Kingdom have included extended leave for patients leaving hospital and a 'supervision register' (Holloway 1996, Sensky 1991). A recent policy document for England and Wales, 'Reforming the Mental Health Act' outlining proposed legislation examines provisions for compulsory treatment in the community, although there will still be no powers to give medication forcibly outside a clinical setting (Dept of Health 2000).

Supporters of this approach suggest that it is less restrictive to compulsorily treat someone in the community than to subject them to repeated hospital admissions (Pinfold 2001). They also argue that it is effective in bringing stability to the lives of people with severe mental illness (O'Reilly 2001). Opponents of compulsory community treatment fear treatment and support will be replaced by a greater emphasis on control, restraint and threat (Pinfold 2001). They argue that compulsion may be used as an alternative to intensive case management or assertive community treatment, which may be all that is needed (Swartz 1995). Compulsory community treatment may also adversely effect the therapeutic alliance between health care professionals and patients and drive people with severe mental illnesses away from services (Pinfold 2001), although the limited data to date do not suggest that this has happened (O'Reilly 2001).

The range of different interventions and ways of reporting frequency of use make it difficult to estimate how often compulsory community treatment is used. The situation is complicated by the fact that in some jurisdictions, different forms of community treatment such as extended release and involuntary outpatient treatment exist in parallel. The available information indicated that these interventions are used sparingly. Canadian and Australian studies of community treatment orders suggest a prevalence of 5 to 15 per 100,000 of the general population (O'Reilly 2000, Preston 2002). In the United States, involuntary outpatient treatment was used in approximately 3 per 100,000 of the general population, 9.8% of new outpatient admissions and 7.1% of continuing outpatients (Ridgely 2001). However, use of involuntary outpatient treatment does vary. Survey data from respondents in 13 states and the District of Columbia indicated they used it commonly or very commonly, while in a further 21 States, use was rare or very rare. Some of this variation may be explained the use of alterative provisions such as extended release (Torrey 1995).

Studies indicating limited but improved outcomes in terms of readmission to hospital, length of stay, and adherence to treatment have often not controlled for selection bias, variations in treatment, and differing criteria for compulsory treatment in the community (McIvor 1998). In South Carolina duration of psychosis was an important determining factor for compulsory treatment in the community (Schied-Cook 1987). In England and Wales, extended leave has been used as a proxy for compulsory treatment in the community and researchers have identified both recent dangerousness and non-adherence as determining factors for being placed on this provision (Sensky 1991). Community treatment orders in New South Wales are mostly used for unmarried men with schizophrenia (Vaughan 2000). Involuntary outpatient treatment in many American states does not include the power to give medication forcibly in a community setting,

but community treatment orders in Australasia do. In addition, studies often do not include a control group to take into account the possibility that participants were recruited when particularly disturbed and that subsequent reductions in hospital use may be due to other factors. In one study with a control group of patients not subject to a compulsory treatment order, the control group showed a similar reduction in time in hospital (Bursten 1986).

In England and Wales the extended leave provision of the Mental Health Act has been evaluated as a proxy for the community treatment order, although it does not cover compulsory treatment in the community. One group of researchers found that extended leave improved adherence, reduced time spent in hospital, and reduced levels of dangerousness (Sensky 1991). The introduction of supervised discharge meant that a patient could be conveyed to a designated location for medical treatment, occupation, or training but was still not obliged to accept treatment; this legislative measure has never been formally evaluated.

Even when studies have used controls, it is difficult to know whether to attribute the health gain to the order or to non-specific effects of increased contact with healthcare professionals (Torrey 1995, Geller 1998, Swartz 1995, Swartz 1999b). A research group found that although patients who received prolonged involuntary community treatment had reduced hospital readmissions and bed days, it was difficult to separate out how much of the improvement was due to compulsory treatment and how much to intensive community management (Swartz 1999b). In the case of non-randomised designs, a further difficulty is ensuring that the control group is as severely ill as the group placed on a community treatment order (Vaughan 2000).

In summary, it remains unclear whether compulsory community treatment can improve patient outcome or reduce health service use. Given the widespread use of such powers in Australasia, Israel, North America and England and Wales it is important to assess the benefit and potential harms of this type of legislation.

OBJECTIVES

To examine the clinical effects and cost effectiveness of compulsory community treatment for people with severe mental illness, in terms of patient outcome or health service use.

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies

Randomised controlled trials. Whilst randomised studies remain the least biased method of evaluating effects of all types of intervention, there are certain situations where conventional randomised studies might be inappropriate, difficult or impossible to conduct (Gilbody 2002). For example, questions relating to health policy and the organisation and delivery of care for people with serious mental disorder might require the randomisation of clinical teams, hospitals, geographical areas or even whole healthcare systems. Adapting the randomised study to these situations involves the conduct of 'clustered randomised trials'. There are specific issues regarding the appropriate conduct and analysis of such studies, particularly the statistical implications of the similarity between individuals in clusters (Gilbody 2002). Where mental health policy - particularly legislative mental health policy - is implemented at a national level, then randomisation within a country is very difficult to achieve. Similarly, if clusters are so large (e.g. whole healthcare systems) then it might be impossible on a practical level to generate or recruit sufficient numbers of clusters to conduct a sufficiently powered or well-balanced randomised trial. Non-randomised designs are used to evaluate such interventions.

The Cochrane Effective Practice and Organisational Change (EPOC) group suggests that non-randomised controlled clinical trials (CCTs), controlled before and after (CBA) studies and interrupted time series analyses (ITS) should be considered in the absence of randomised evidence (Bero 1998). There is currently a Cochrane Non-Randomised Studies Methods Group (NRSMG) that is seeking to publish guidelines on the use of non-randomised data in Cochrane reviews (Bero 1998). In the interim, non-randomised studies will only be included in reviews in cases where randomised studies are impossible to conduct. The inclusion of non-randomised data should be clearly justified within a review and in collaboration with the reviewers contact editor.

This review is restricted to randomised controlled trials (RCTs) in order to minimise bias by controlling for unknown or unmeasured confounders. We did not include quasi-randomised trials. A future review will consider controlled clinical trials (CCTs), controlled before and after studies (CBAs) and interrupted time series (ITS) designs.

Types of participants

We included adults with severe mental illnesses (mainly schizophrenia and schizophrenia-like disorders, bipolar disorder, or depression with psychotic features), however diagnosed, who were managed in a community setting. Substance abuse was not considered to be a severe mental disorder in its own right. However studies were eligible if they dealt with people with both diagnoses, i.e. people with severe mental illness plus substance abuse.

Types of intervention

1. Compulsory community treatment
For an intervention to be accepted as compulsory community treatment it must be described in the trial using the following terms: community treatment order, involuntary outpatient treatment, involuntary outpatient commitment, extended leave, extended release or supervised discharge.

Extended leave provisions or supervised discharge are applied at the time of discharge from compulsory in-patient treatment. They are used in Canada (Gray 2001), Great Britain (Sensky 1991) and New Hampshire, USA (Torrey 1995). They give mental health professionals the right to return a patient to hospital against their wishes if they do not comply with treatment.

Community treatment orders are used in Australia (Vaughan 2000) and Canada (Gray 2001) and give mental health professionals the right to place an individual on an order, whether they are in hospital or not. This is in contrast to extended leave or supervised discharge, which only applies to patients who are being discharged from inpatient care (Gray 2001). Community treatment orders are designed to divert people from possibly having to be admitted as inpatients. In addition, unlike leave, the individual may not have to meet the same criteria for treatment as an inpatient (Gray 2001). In Australia, it can include the power to force medication in the community (Preston 2002). Involuntary outpatient treatment or commitment is the preferred term in the United States and covers court-ordered community treatment (O'Reilly 2001). In this case, a judge, not a health care professional decides on the appropriateness of the order.

2. Standard care
The care that a person would normally receive had they not been included in the research trial as long as it did not involve compulsory community treatment in any form.

Types of outcome measures

We classified the outcome measures under two categories: health service outcomes and patient level outcomes (dichotomous outcomes are at the top of each list). Primary outcomes of interest ("*") included inpatient service use (bed days and admissions), outpatient service use, and forensic contacts (trouble with police, arrests).

A. Health service outcomes
1. Health service contact and utilisation
1.1 Admission to hospital*
1.2 Mean days spent in hospital per month*
1.3 Remaining in contact with psychiatric services - leaving the study early

B. Patient level outcomes
2. Social functioning
2.1 General
2.2 Specific - imprisonment, police contact and arrests*
2.3 Specific - employment
2.4 Specific - accommodation status

3. Mental state
3.1 General
3.2 Specific - psychopathology

4. Quality of life
4.1 General
4.2 Self esteem

5. Satisfaction
5.1 Number of needs for care
5.2 Patient satisfaction
5.3 Carer satisfaction
5.4 Perceived coercion

We did not plan to report highly specific outcomes (such as, for example, 'sense of safety') because multiple testing of sub-components of outcome scales carries a risk of type I errors (finding a difference when none was present). Outcomes relating to the process of the interventions themselves, such as number of out-patient visits, were not reported (Wagner 2003). We did not consider loss to follow up for study purposes to be the same as loss to follow up to clinical services, as consent to treatment is not necessarily the same as consent to participate in a study.

In the original protocol for this study we stated we would group outcomes into short term (within 12 weeks of the start of therapy), medium term (between 13 to 24 weeks after the beginning of therapy), and long-term (more than 24 weeks after the start of therapy). As only Swartz 1999 papers reported the results of intermediate periods of follow-up at one and five months, we have only used outcomes at 11 to 12 month follow-up to allow for comparison with the 11 month outcomes of Steadman 2001.

SEARCH STRATEGY FOR IDENTIFICATION OF STUDIES

See: Schizophrenia Group search strategy

See: Cochrane Schizophrenia Group search strategy

We used the following strategies without language restriction.

1. Electronic searching
1.1 Cochrane Schizophrenia Group's Register (May 2003): we searched using the phrase:
[((community* AND treatment* AND order*) OR (involuntary* AND outpatient* AND treatment*) OR (involuntary* AND outpatient* AND commitment*) OR (extended* AND leave*) in Title or (*community* AND *treatment* AND *order*) OR (*involuntary* AND *outpatient* AND *treatment*) OR (*involuntary* AND *outpatient* AND *commitment*) OR (*extended* AND *leave*) or (*supervised* AND *discharge*) in title, abstract, index terms of REFERENCE] or Involuntary Commitment in intervention of STUDY)]

The Schizophrenia Groups trials register is based on regular searches of BIOSIS Inside; CENTRAL; CINAHL; EMBASE; MEDLINE and PsycINFO; the hand searching of relevant journals and conference proceedings, and searches of several key grey literature sources. A full description is given in the Group's module

1.2. Cochrane Library (Issue 2 2003): we searched using the phrase:

[(exp Commitment of Mentally Ill/ or (community NEAR treatment NEAR order) or (involuntary NEAR outpatient NEAR treatment) or (involuntary NEAR outpatient NEAR commitment) or (extended NEAR leave) or (supervised NEAR discharge)]

1.3 BIOSIS (1985 to July 2003): we searched using the phrase: [(Commitment AND Mentally AND Ill or (extended AND leave) or (community AND treatment AND order) or (involuntary AND outpatient AND treatment) or (involuntary AND outpatient AND commitment) or (extended AND leave) or (supervised AND discharge) or (mandatory AND programs))]

1.4 CINAHL (1982 to July 2003): we searched using the Cochrane Schizophrenia Group's phrase for randomised controlled trials combined with:

[(exp Involuntary Commitment/ or exp Hospitalization/ or (extended adj1 leave) or (community adj2 treatment adj2 order) or exp "NONCOMPLIANCE (NANDA)"/ or (involuntary adj3 outpatient adj3 treatment) or (involuntary adj3 outpatient adj3 commitment) or (supervised adj2 discharge) or (mandatory adj3 programs) or (extended adj3 leave))

1.5 EMBASE (1980 to July 2003): we searched using the Cochrane Schizophrenia Group's phrase for randomised controlled trials combined with:

[(exp Commitment of Mentally Ill/ or (extended adj1 leave) or (community adj2 treatment adj2 order) or (involuntary adj3 outpatient adj3 treatment) or (involuntary adj3 outpatient adj3 commitment) or (extended adj3 leave) or (supervised adj2 discharge) or (mandatory adj3 programs))

1.6. MEDLINE (1966 to July 2003): we searched using the Cochrane Schizophrenia Group's phrase for randomised controlled trials combined with:

[(exp Commitment of Mentally Ill/ or jurisprudence/ or exp mandatory programs/ or (extended adj1 leave) or (community adj2 treatment adj2 order) or (involuntary adj3 outpatient adj3 treatment) or (involuntary adj3 outpatient adj3 commitment) or (extended adj leave) or (extended adj3 leave) or (supervised adj2 discharge))

1.7. PsycINFO (1872 to July 2003): we searched using the Cochrane Schizophrenia Group's phrase for randomised controlled trials combined with:

[(exp outpatient commitment/ or exp Legal Processes/ or exp "Commitment (Psychiatric)"/ or exp Psychiatric Hospitalization/ or exp Laws/ or exp Involuntary Treatment/ or (community adj2 treatment adj2 order) or (involuntary adj3 outpatient adj3 treatment) or (involuntary adj3 outpatient adj3 commitment) or (extended adj3 leave) or (supervised adj2 discharge) or (mandatory adj3 programs))]

1.8 SCISEARCH - Science Citation Index: we sought each of the included studies as a citation on the SCISEARCH database. We then inspected reports of articles that had cited these studies to identify further trials.

1.9 Google - Internet search engine (July 2003)
We searched the Internet to identify any relevant publications using the following terms:
community treatment order, involuntary outpatient treatment, involuntary outpatient commitment, extended leave, extended release or supervised discharge.

2. Reference searching
We also inspected the references of all identified studies (including those rejected from the review) for more studies.

3. Personal contact
We contacted the first author of each included study and known experts who had published reviews in the field for information regarding unpublished trials and extra data on the published trials.

METHODS OF THE REVIEW

1. Selection of trials
Two reviewers (SK, LAC) independently inspected the citations identified from the search. They identified potentially relevant abstracts, ordered full papers and reassessed these for inclusion and methodological quality. They discussed and reported any disagreement. Where the two reviewers disagreed about the inclusion of a study, these were resolved by consensus, and consultation with a third reviewer (NP) if a dispute could not be resolved. Where resolution was not possible the author was contacted to obtain more information and clarification. In order to restrict selection bias, we printed out a list of all titles and abstracts excluding the author's names, institutions, and journal titles. The article was rejected if the title and abstract contained sufficient information to determine that the article did not meet the inclusion criteria. We kept a record of all rejected papers and the reasons for rejection.

2. Assessment of quality
Each reviewer, again, working independently, assigned trials to three quality categories as described in the Cochrane Collaboration Handbook (Clarke 2002, Table 01, Table 02, Table 03). When disputes arose as to which category a trial was allocated, we attempted resolution by discussion. When this was not possible, and further information was necessary, data were not entered into the analyses and we assigned the study to the list of those awaiting assessment. All non-randomised studies were retained for inclusion in the companion non-randomised study review.

3. Data management

3.1 Data extraction

SK and LAC independently undertook data extraction. We discussed any disagreement, documented decisions and, where necessary, we contacted the authors of the studies to help resolve the issue.

3.2 Losses to follow up, and intention to treat analysis

Reports of trials should give an adequate description of the loss of participants in terms of the number of withdrawals, dropouts, and protocol deviations. We conducted an intention to treat analysis, including all those who were randomised to either compulsory community treatment or control, regardless of subsequent disposition. In the protocol (Kisely 2004), we proposed to exclude studies in which more than 35% of those originally randomised had been lost to follow-up. However, the New York study (Steadman 2001) reported attrition rates of approximately 45% for 11-month outcomes. As we were only able to identify two randomised controlled trials, we decided to subject this high attrition study to a sensitivity analysis. If we found that inclusion of this data resulted in a substantive change in the estimate of effect, we would not add them to results from Swartz 1999, but present them separately.

4. Data analysis

4.1 Binary data

For binary outcomes we calculated a standard estimation of the fixed effects risk ratio (RR) and its 95% confidence interval (CI) as well as the number needed to treat/harm statistic (NNT/H). We calculated numbers needed to treat (NNT) using the methodology of Cook (Cook 1995) for the results that were not significant. If statistically significant we took into account the event rate in the control group (Bandolier 1995). If we found heterogeneity (see section 5), then a decision was made about whether a quantitative synthesis (meta-analysis) was the appropriate method of summarising this body of research and used a random effects model.

4.2 Continuous data

4.2.1 Skewed data: continuous data on clinical and social outcomes are often not normally distributed. To avoid the pitfall of applying parametric tests to non-parametric data we applied the following standards to all data before inclusion: (a) standard deviations and means were reported in the paper or were obtainable from the authors; (b) when a scale started from a finite number (such as zero), the standard deviation, when multiplied by two, was less than the mean (as otherwise the mean was unlikely to be an appropriate measure of the centre of the distribution - Altman 1996). Endpoint scores on scales often have a finite start and end and this rule may be applied to them.

4.2.2 Summary statistic: for continuous outcomes we estimated a weighted mean difference (WMD) between groups. Again, if we found heterogeneity (see section 5), then we made a decision about whether a quantitative synthesis (meta-analysis) was the appropriate method of summarising this body of research and used a random effects model.

4.2.3 Valid scales: we included continuous data from rating scales only if the measuring instrument had been described in a peer-reviewed journal and the instrument was either a self report or completed by an independent rater or relative (not the therapist) (Marshall 2000).

4.2.4 Cluster trials: We stated in our protocol (Kisely 2004) that we would account for cluster randomisation in our analysis. However, both studies identified in our review were randomised by subject, not by clinician or practice.

5. Test for heterogeneity

Firstly, we considered all the included studies within any comparison to judge clinical heterogeneity. Then we used visual inspection of graphs to investigate the possibility of statistical heterogeneity. We supplemented this using, primarily, the I-squared statistic. This provides an estimate of the percentage of variability due to heterogeneity rather than chance alone. Where the I-squared estimate was greater than or equal to 75%, we interpreted this as indicating the presence of high levels of heterogeneity (Higgins 2003). If inconsistency was high, we did not synthesise data, but presented them separately and investigated reasons for heterogeneity.

6. Addressing publication bias

In our original protocol (Kisely 2004) we state that data from all included studies would be entered into a funnel graph (trial effect against trial size) in an attempt to investigate the likelihood of overt publication bias (Egger 1997). Because there were never more than two studies for each outcome, we were unable to use this technique to investigate publication bias.

7. Sensitivity analyses

In our original protocol we also stated that we would investigate potential sources of heterogeneity including: i) different variations of types of intervention (e.g. community treatment orders, involuntary outpatient treatment, involuntary outpatient commitment or supervised discharge), and ii) variations in methodological quality such as intention-to-treat analysis or adequate descriptions of reasons for dropout (high versus low methodological quality). Because there were never more than two studies for each outcome, and all were of court -ordered compulsory community treatment, we could not undertake such sensitivity analyses as we had hoped.

8. General

Where possible, reviewers entered data in such a way that the area to the left of the line of no effect indicated a favourable outcome for compulsory community treatment.

DESCRIPTION OF STUDIES

See Tables of Excluded Studies and Included studies.

1. Excluded studies
Twenty-seven studies are in the excluded studies table of this review. We excluded 14 as they were not randomised. These reported the results of a wide range of interventions including extended leave provisions or supervised discharge (Sensky 1991), community treatment orders (Vaughan 2000, Preston 2002) and court ordered outpatient commitment (Geller 1998, Greeman 1985, Hiday 1987, Hiday 1989). Five other studies did not have any control group and we had to exclude a further seven because they were reviews that either did not contain primary data or were not reviews of intervention studies. We excluded one randomised trial (Wagner 2003) as it reported outcomes inherent to the process of outpatient commitment, namely the number of out-patient visits for medication review, counselling and case management.

2. Awaiting assessment
No trials await assessment.

3. Ongoing studies
We know of no ongoing studies but would welcome any relevant information.

4. Included studies
Two studies are included. Both compare a form of compulsory community treatment known as outpatient commitment (OPC) with standard community care. Swartz 1999 was based in North Carolina, USA and Steadman 2001 in New York.

4.1 Length of trials
All papers report a similar follow-up period of up to 12 months. Only Swartz 1999 reported results of intermediate follow-up at four and eight months.

4.2 Participants
The two randomised studies involved 416 people. Most participants suffered from some sort of psychosis, all were over 18 years of age and about 40% were women. Although people were significantly socially impaired, violence was an exclusion criteria for both studies. Both studies were restricted to people who were being discharged from hospital into the community. Steadman 2001 involved people who were known not to be compliant with services once discharged.

4.3 Setting
Both studies were set in outpatient mental health programmes of the USA.

4.4 Study size
Although the number of studies was low, both trials were quite large and included more than 150 people per study. However, ten people in the New York study did not complete baseline assessments after randomisation, leaving 142 in the trial (Steadman 2001). We have conducted an intention to treat (ITT) analysis, and have therefore used the sample size of 152 for our calculations.

4.5 Interventions and analysis
Both trials used the American OPC (Outpatient Commitment) form of treatment. This is a court-ordered compulsory treatment plan for people suffering from severe mental illness who have the capacity to survive in the community with available supports, a clinical history indicating a need for treatment to prevent deterioration that would predictably result in dangerousness, and a mental status that limits or negates their ability to comply voluntarily or make informed decisions regarding treatment. Following a hearing, the court may order compulsory community treatment, which allows clinicians to request that law officers escort the patient to a mental health facility for examination, persuasion to accept treatment, or eventual evaluation for involuntary inpatient commitment (Swartz 1999). The statute explicitly prohibits forced medication. The provisions of outpatient commitment were similar in both states.

The intervention and control groups in both studies received a full treatment plan, including case management and outpatient treatment as clinically indicated.

Swartz 1999 also reported on a non-randomised subgroup of participants but only data from the randomised part of the study were used in this review.

4.6 Outcomes
4.6.1 Missing outcomes
Satisfaction of patients or carers were not reported in any of the trials. We found no data for costs or mortality rates.

4.6.2 Scales
Only one scale was used by both studies.
MAES: The Modified Admission Experience Survey (Gardner 1993). This is a 15-item true/false survey measuring domains of perceived coercion, perceived negative pressures, and process exclusion.

METHODOLOGICAL QUALITY

1. Randomisation
Steadman 2001, the New York study, did describe randomisation, using a random number list to identify assignment to either the intervention or control group. Swartz 1999 did not provide a description of the randomisation method. Both studies were rated 'B' (Table 01, Table 02).

2. Blinding at outcome
Both studies controlled for selection bias by using an intention to treat analysis and used self-report measures for at least some of the outcomes, which are effectively self-blinding. In the case of other assessments we rated both studies 'C' (Table 03).

3. Leaving the study early.

Reporting on numbers leaving the studies early was unclear. Although mentioned in the text, trialists did not report actual numbers from each individual group and because of this we were unable to assess this outcome.

4. Data reporting
Overall data reporting was poor and confusing. Continuous data for several outcomes were unusable as no variance was reported. One study was reported eight times (Swartz 1999) with the different papers presenting various aspects of the study with no single report giving the full picture of numbers of people (i) screened, (ii) discharged to another facility or home before randomisation, (iii) deemed unsuitable by the treating team, (iv) not meeting exclusion criteria or (v) lost to follow-up. In addition, the researchers supplemented this same study by follow-up of an additional non-randomised group of patients with a recent history of violence, who had also been placed on OPC. In some instances we found it difficult to disentangle the results of the randomised trial from the non-randomised study. In the paper from North Carolina (Swartz 2002), data from randomised and non-randomised studies were not presented separately. Another only reported percentages rather than absolute numbers people who had been followed up (Swartz 1999b). We contacted the authors of the paper who kindly confirmed that at follow-up there were 114 people in the control group, 102 in the OPC group and 46 who were not randomised. Similarly, the authors of the New York study kindly supplied the additional data for an intention to treat analysis of their paper.

RESULTS

1. Search
Our search identified 245 references. We had to obtain 37 papers for further inspection and excluded 27. Only two trials (ten papers) met the inclusion criteria of this review.

2. COMPARISON 1. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Attrition rates for Steadman 2001 were 45%. As only two studies were included in this review it was decided that rather than excluding data from this study, a sensitivity analysis would be carried out and if the high attrition data substantially changed the estimate of effect they would be presented separately. The inclusion of data from Steadman 2001, however, did not alter the overall effect and so were added to data from Swartz 1999.

2.1 Health service outcomes - by 11-12 months

2.1.1 Readmission to hospital
Readmission rates were similar. By 11-12 months trials found no significant difference between groups (2 RCTs, n=416, RR 0.98 CI 0.79 to 1.2). In terms of numbers needed to treat, it would take 85 OPC orders to prevent one readmission.

2.1.2 Compliance with medication
Similarly, at a one year follow up no difference between groups was found for the outcome compliance with medication (2 RCTs, n=416, RR 0.99 CI 0.83 to 1.19) '

2.2 Patient level outcomes - by 11-12 months

2.2.1 Social functioning: trouble with police
People receiving compulsory community treatment were no more likely to be arrested than those receiving standard care (2 RCTs, n=416, RR outcome 'arrested at least once' 0.97 CI 0.62 to 1.52). Results also showed people allocated compulsory community treatment were no more likely to commit a violent act than those in standard care (2 RCTs, n=416, RR 0.82 CI 0.56 to 1.21). In terms of numbers needed to treat, it would take 238 OPC orders to prevent one arrest.

2.2.2 Social functioning: homelessness
Although the results appeared to favour the compulsory community treatment group, we found no statistically significant difference in the risk of being homelessness between groups (2 RCTs, n=416, RR 0.67 CI 0.39 to 1.15). In terms of numbers needed to treat, it would take 27 OPC orders to prevent one episode of homelessness.

2.2.3 Quality of life: victimisation
Swartz 1999 provided data for this outcome. Those receiving compulsory community treatment were significantly less likely to have been victimised (been a victim once or more of either violent or non-violent crime) than those in the standard care group (1 RCT, n=264, RR 0.5 CI 0.31 to 0.8, NNT 6 CI 6 to 6.5).

2.2.4 Satisfaction with care: perceived coercion
For this review we defined perceived coercion as a participant feeling lack of autonomy in seeking outpatient care and/or negative pressures, captured threats and/or force pertaining to treatment. Process exclusion consisted of participants' feelings of lack of involvement and validation in treatment decisions. Here results appear to favour standard care but the difference between groups did not reach conventional levels of statistical significance (2 RCTs, n=416, RR 1.36 CI 0.97 to 1.89).

3. Additional analyses
All the papers from Swartz 1999 reported the results of a non-random post hoc analysis of the intervention group based on duration of involuntary outpatient treatment. In two, this was supplemented with a follow-up of an additional non-randomised group of patients with a recent history of violence who were placed on compulsory community treatment (Swartz 2001, Hiday 2002). These papers suggested that an OPC of greater than 180 days duration was associated with improved outcomes in terms of readmission rate, compliance with medication, homelessness and forensic history. However, such analyses are subject to the bias that randomised trials are designed to minimise (Hotopf 1999). For instance, analysis of people who have been not randomly assigned to OPC groups of less than, and more than, 180 days may reflect

a bias where OPC was selectively extended when it seemed to be helping the patient (Szmukler 2001).

4. Sensitivity analyses & publication bias
Because there were never more than two studies for each outcome, and all were of court-ordered compulsory community treatment, the authors could not undertake sensitivity analyses as described in the protocol for type of intervention (e.g. community treatment orders, involuntary outpatient treatment, involuntary outpatient commitment or supervised discharge) or quality of study. Similarly, it was not possible to address publication bias given the small number of studies identified.

DISCUSSION

1. General
In spite of the widespread use of compulsory community treatment and the continued controversy as to its effectiveness, we were struck by the limited number of studies that have been conducted in this area. We have therefore attempted to draw modest conclusions, based on available evidence, and to highlight areas requiring further study, rather than draw firm conclusions that may not be based on evidence of high quality.

This review revealed little evidence for the effectiveness of compulsory community treatment in any of the main outcome indices: health service use, costs, social functioning, mental state, quality of life or satisfaction with care. We were only able to establish a statistically significant effect for one outcome, social functioning (victimisation).

We were surprised by the lack of data on psychosocial outcomes as measured by standardised instruments. Although ten papers were identified, these represented only two trials and both were of court-ordered outpatient commitment in the United States. Problems included small numbers of participants and questions concerning methodological quality. This illustrates the difficult, but not impossible, task of using trial methods to study the effect of such legislation.

In the case of the North Carolina study (Swartz 1999), different papers reported various aspects of the study but did not give a clear overall results. In addition, this study was supplemented by follow-up of an additional non-randomised group of patients with a recent history of violence who were also placed on OPC. It was sometimes difficult to separate the results of the randomised trials from the non-randomised study. In the case of the New York study (Steadman 2001), there were a relatively small number of participants and the suggestion that members of the control group and their case managers thought that they were actually on OPC (NASMHPD 2001). These factors would minimise any effect of the intervention.

2. COMPARISON 1. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

2.1 Health service outcomes
Only data for two health service outcomes (readmission to hospital and compliance with medication) were usable. Although data on other outcomes would have been interesting, the data we do have is both interesting and pragmatic. In both cases there were no differences between groups. By one year, people were no more likely to be readmitted to hospital if they were placed on OPC than if they had received standard care. They were also just as likely to comply with medication. It should be noted, however, that these results are based on two studies only and in one (Steadman 2001) attrition rates were 45% so no firm conclusions can be made.

2.2 Patient level outcomes
Four patient level outcomes (trouble with the police, homelessness, coercion and victimisation) were presented.

By one year, the number of arrests by police were similar for both groups and people in the compulsory community treatment group did not commit any more acts of violence than those in standard care. These results are, again, only from two studies. Another problem with the data in this area was a possibility of selection bias as patients with a history of violence were explicitly excluded from both trials. This limits their applicability as recent dangerousness, particularly violence against others, is often the reason for compulsory treatment in hospital or the community (Lansing 1997, Sensky 1991). There is also a risk of bias when outcome data are not assessed blind to group status and the results of people who were not randomised or post hoc analyses are included in papers.

Perceived coercion appeared to favour the standard care group i.e the number of people in standard care who felt pressured into attending treatment sessions was lower than those in compulsory community treatment, but the difference was just not statistically significant. Proponents of compulsory community treatment argue that it is less coercive than the alternatives of compulsory treatment in hospital or imprisonment (Pinfold 2001). However, our findings suggest that compulsory community treatment remains an unproven way of reducing either. It may also have harmful effects. In two papers from North Carolina, perceived coercion was significantly higher in the OPC group, although these findings must be treated with caution given methodological problems with both papers and the non-significant result from Steadman 2001. On the other hand, higher perceived coercion in the OPC group was one of only two findings in this meta-analysis to almost reach statistical significance. This may have implications for the subsequent therapeutic alliance between patients and mental health services, in spite of claims to the contrary (O'Reilly 2001). Again, the number of people who were homeless by one year was similar in both groups.

The only significant result was found for victimisation with people on compulsory community treatment less likely to be victims of a violent or non-violent crime by one year. This result is from data provided by a single study (Swartz 1999) and as such no firm conclusions can be drawn.

2.3 NNT
Using methodology that enables NNT to be calculated from statistically non-significant results, we found that high numbers of people would have to receive compulsory community treatment to gain a positive outcome. It could be argued that compulsory community treatment arises from, and propagates, the erroneous belief that people with mental illness are somehow more dangerous than the rest of society (Steadman 1998b). No other group would be subject to a measure that curtails the freedom of 85 individuals to avoid one admission, or of 238 to avoid one arrest. Even where changes in outcome have been shown such as decreased criminal victimisation (Hiday 2002), we still do not know whether these changes are due to the legislative framework or greater intensity of contact (McIvor 1998, McIvor 2001).

AUTHORS' CONCLUSIONS

Implications for practice

1. For people with serious mental illnesses
Patients and carers should question the rationale for compulsory community treatment and advocate more effective treatments.

2. For clinicians
Clinicians and health service planners who wish to reduce hospital admissions should consider alternatives with stronger evidence for effectiveness such as Assertive Community Treatment (Marshall 2003b).

3. For policy makers
Based on results from this review, there is no strong evidence to support the claims made for compulsory community treatment that make it so attractive for legislators. It does not appear to reduce health service use or improve patients' social functioning. It also does not significantly reduce perceived coercion. Lack of data made it impossible to assess its effect on costs, mental state and other aspects of patient/carer satisfaction.

Nevertheless, governments in jurisdictions such as Nova Scotia and England and Wales are actively considering similar legislation. If it is introduced, one particular problem which would arise would be the difficulty clinicians would experience in deciding when to discharge a person from a community order, since this would be considerably greater than deciding when to stop an inpatient treatment order (Moncrieff 2003). Aside from this and the risks to individual liberty, such initiatives give the impression that legislators are addressing the needs of patients and carers while actually doing very little at all. Legislation in this area may detract from the introduction of interventions that are of benefit to individuals with severe mental disorder such as Assertive Community Treatment (Marshall 2003a), but which are more expensive than legislative solutions to the problem. If governments continue to introduce this type of legislation, without further evidence for effectiveness, some evaluation of outcome should be included.

Implications for research

1. General
Compliance with CONSORT standards of reporting (Begg 1996, Moher 2001) would have ensured that more data would have been available for analysis from the two important included studies.

2. Specific
In spite of the widespread use of compulsory community treatment it is remarkable that the only studies which we could include are of court-ordered community treatment (outpatient commitment) in the United States. There are much less data, and no randomised trials, of other forms of compulsory community treatment. Further research into the clinical effects of compulsory community treatment is possible and necessary.

2.1 Types of studies
The pioneering trials presented in this review have set a standard, showing that such research is difficult but not impossible and that it can be highly informative. It has, however, been argued that the level of difficulty involved means that further studies using this methodology may not be feasible (Bindman 2002). The analysis of routine administrative data sets may be an alternative strategy. Although the analysis of such data is subject to biases and difficulties of its own, the use of epidemiological sampling frames that cover all patients placed on compulsory community treatment would help to minimise selection or follow-up bias (Preston 2002). In particular, using these would have meant that people with a history of violence who were explicitly excluded from both trials could have been included. The difficulty of such studies is the identification of suitable controls. Quasi-experimental designs comparing people from jurisdictions with similar health systems where one allows compulsory community treatment and the other does not, may be an answer. We plan a further review to consider controlled clinical trials, controlled before and after studies and interrupted time series designs using clinical or epidemiological data.

In addition to quantitative research, qualitative techniques may give additional insights into the effect of compulsory community treatment on patients, carers and health care professionals (O'Reilly 2001). We may also need to consider the place of compulsory community treatment in the range of coercive measures used to improve compliance with treatment, and look at additional outcomes such as risk reduction (Bindman 2002).

2.2 Setting
Another interesting finding was the absence of any work from outside the English-speaking world, even though our literature search was not restricted to publications in English. We do not know whether this is due to publication bias or because such legislation is either absent or accepted without controversy.

2.3 Participants
Further research may determine whether there are particular people with specific problems best managed with compulsory treatment orders.

2.4 Interventions
We require further well conducted studies to establish whether it is the intensity of treatment, its compulsory nature or legislative framework that affects outcomes.

2.5 Outcomes
Although the outcomes that were recorded were useful and informative, we were surprised by the lack of data on psychosocial outcomes as measured by standardised instruments. Studies should use well-validated instruments to measure outcome, and should also collect and report categorical and 'count' data, such as days in hospital. Data should be in a form that can easily be incorporated into a systematic review with means and standard deviations (or standard errors) of all continuous outcome variables.

ACKNOWLEDGEMENTS

SK and LAC are employed by Dalhousie University and the Health Outcomes Unit of Capital District Health Authority, Halifax, Canada. The principle investigators of the two groups who conducted randomised controlled trials in this area kindly confirmed that we had all the relevant papers.

POTENTIAL CONFLICT OF INTEREST

None.

SOURCES OF SUPPORT

External sources of support

- No sources of support supplied

Internal sources of support

- Health Outcomes Unit, Capital District Health Authority, Halifax CANADA
- Dalhousie University, Halifax CANADA
- Fremantle Hospital AUSTRALIA
- University of Western Australia AUSTRALIA

REFERENCES

References to studies included in this review

Steadman 2001 *{published data only}*

Steadman HJ. *Final Report: Research study of the New York City involuntary outpatient commitment pilot program*. Delmar, NY: Policy Research Associates Inc., 1998.

* Steadman HJ, Gounis K, Dennis D, Hopper K, Roche B, Swartz M, Robbins P. Assessing the New York City involuntary outpatient commitment pilot program. *Psychiatric Services* 2001;**52**(3):330–6.

Swartz 1999 *{published data only}*

Compton SN, Swanson, JW, Wagner HR, Swartz MS, Burns BJ, Elbogen EB. Involuntary outpatient commitment and homelessness in persons with severe mental illness. *Mental Health Services Research* 2003;**5**(1):27–38.

Hiday VA, Swartz MS, Swanson JW, Borum R, Wagner HR. Impact of outpatient commitment on victimization of people with severe mental illness. *American Journal of Psychiatry* 2002;**159**:1403–11.

Swanson JW, Borum R, Swartz MS, Hiday VA, Ryan Wagner H, Burns BJ. Can involuntary outpatient commitment reduce arrests among persons with severe mental illness?. *Criminal Justice and Behaviour* 2001;**28**(2):156–89.

Swanson JW, Swartz MS, Wagner HR, Burns BJ. Involuntary outpatient commitment and reduction of violent behaviour in persons with severe mental illness. *British Journal of Psychiatry* 2000;**174**: 324–31.

Swartz MS, Hiday VA, Swanson JW, Wagner HR, Borum R, Burns B. Measuring coercion under involuntary outpatient commitment. Initial findings from a randomised controlled trial. *Research in Community and Mental Health* 1999;**10**:52–77.

Swartz MS, Swanson JW, Ryan Wagner H, Burns BJ, Hiday VA. Effects of involuntary outpatient commitment and depot antipsychotics on treatment adherence in persons with severe mental illness. *Journal of Nervous and Mental Disease* 2001;**189**(9):583–92.

* Swartz MS, Swanson JW, Wagner HR, Burns BJ, Hiday VA, Borum R. Can involuntary outpatient commitment reduce hospital recidivism? Findings from a randomised trial with severely mentally ill individuals. *American Journal of Psychiatry* 1999;**156**:1968–75.

Swartz MS, Wagner HR, Swanson J, Hiday VA, Burns BJ. The preceived coerciveness of involuntary outpatient commitment: findings from an experimental study. *Journal of the American Academy of Psychiatry and the Law* 2002;**30**(2):207–17.

References to studies excluded from this review

Bindman 2002

Bindman J. Involuntary outpatient treatment in England and Wales. *Current Opinion in Psychiatry* 2002;**15**:595–8.

Borum 1999

Borum R, Swartz M, Riley S, Swanson J, Hiday VA, Wagner R. Consumer perceptions of involuntary outpatient commitment. *Psychiatric Services* 1999;**50**(11):1489–91.

Bursten 1986

Bursten P. Post-hospital mandatory outpatient treatment. *American Journal of Psychiatry* 1986;**143**:1255–8.

Fernandez 1990

Fernandez GA, Nygard S. Impact of involuntary outpatient commitment on the revolving-door syndrome in North Carolina. *Hospital and Community Psychiatry* 1990;**41**(9):1001–4.

Geller 1998

Geller J, Grudzinskas AJJ, McDermeit M, Fisher WH, Lawlor T. The efficacy of involuntary outpatient treatment in Massachusetts. *Administration Policy and Mental Health* 1998;**25**:271–85.

Greeman 1985

Greeman M, McClellan T. The impact of a more stringent commitment code in Minnesota. *Hospital and Community Psychiatry* 1985; **36**(9):990–2.

Hiday 1987

Hiday VA, Scheid-Cook TL. The North Carolina experience with outpatient commitment: a critical appraisal. *International Journal of Law and Psychiatry* 1987;**10**(3):215–32.

Hiday 1989

Hiday VA, Scheid-Cook TL. A follow-up of chronic patients committed to outpatient treatment. *Hospital and Community Psychiatry* 1989;**40**(1):52–9.

Hiday 1999

Hiday nV, Swartz M, Swanson J, Borum R, Wagner HR. Criminal victimisation of persons with severe mental illness. *Psychiatric Services* 1999;**50**(1):62–8.

Kanter 1995

Kanter A, Aviram U. Israel's involuntary outpatient commitment law: Lessons from the American experience. *Israel Law Review* 1995; **29**(4):565–635.

Lidz 1999

Lidz CW. Coercion in psychiatric care: what have we learned from research?. *Journal of the American Academy of Psychiatry & the Law* 1998;**26**(4):631–7.

Miller 1982

Miller R, Fiddleman P. Outpatient commitment: treatment in the least restrictive enviroment?. *Hospital and Community Psychiatry* 1984;**35**(2):147–51.

Miller 1985

Miller RD. Commitment to outpatient treatment: A national survey. *Hospital and Community Psychiatry* 1985;**36**(3):265–7.

Munetz 1996

Munetz MR, Grande T, Kleist J, Peterson G. The effectiveness of outpatient civil commitment. *Psychiatric Services* 1996;**47**(11):1251–3.

NASMHPD 2001

Medical Directors Council of NASMHPD. Technical Report on Involuntary Outpatient Commitment. http://www.nasmhpd.org/Involuntary_Outpatient_Commitment.pdf 2001.

NHPF 2000

National Health Policy Forum. Outpatient Commitment in Mental Health: Is Coercion the Price of Community Services?. Page 1. No. 757 ISSUE BRIEF 2000; (757):www.nhpf.org/pdfs_ib/IB757_OutptMentalH_7-11-02.pdf.

O'Keefe 1997

O'Keefe C, Potonza DP, Mueser KT. Treatment outcomes for severly mentally ill patients on conditional discharge to community-based treatment. *Journal of Nervous and Mental Disease* 1997;**185**(6):409–11.

Preston 2002

Preston N, Kisely S, Xiao J. Assessing the outcome of compulsaory psychiatric treatment in the community: epidemiological study in Western Australia. *BMJ* 2002;**324**:1244–9.

Ridgely 2001

Ridgely S, Borum R, Pertila J. *The effectiveness of involunary outpatient treatment. Empiral evidence and the experience of 8 states*. California: RAND, 2001.

Rohland 1998

Rohland BM. *The role of outpatient commitment in the management of persons with schizophrenia*. Des Moines, IA: Iowa Consortium for Mental health, 1998.

Schwartz 1997

Swartz MS, Burns BJ, George LK, Swanson J, Hiday VA, Borum R, Wagner HR. The ethical challenges of a randomized controlled trial of involuntary outpatient commitment. *Journal of Mental Health Administration* 1997;**24**(1):35–43.

Schwartz 2001b

Schwartz MS, Swanson JW, Wagner HR, Burns BJ, Hiday VA, Borum R. A randomised controlled trial of outpatient commitment in North Carolina. *Psychiatric Services* 2001;**52**(3):325–9.

Sensky 1991

Sensky T, Hughes T, Hirsch S. Compulsory psychiatric treatment in the community. I. A controlled study of compulsory community treatment with extended leave under the Mental Health Act: special characteristics of patients treated and impact of treatment. *British Journal of Psychiatry* 1991;**158**:792–9.

Swartz 2001b

Swartz MS, Swanson JW, Wagner HR, Burns BJ, Hiday VA, Borum R. A randomised controlled trial of outpatient commitment in North Carolina. *Psychiatric Services* 2001;**52**(3):325–9.

Van Putten 1988

Van Putten R, Santiago J, Berren M. Involuntary outpatient commitment in Arizona: a retropsective study. *Hospital and Community Psychiatry* 1988;**39**(9):953–8.

Vaughan 2000

Vaughan K, McConaghy N, Wolf C, Myhir C, Black T. Community treatment orders: relationship to clinical care, medication compliance, behavioural disturbance and readmission. *Australian and New Zealand Journal of Psychiatry* 2000;**34**:801–8.

Wagner 2003

Wagner HR, Swartz MS, Swanson JW, Burns BJ. Does involuntary outpatient commitment lead to more intensive treatment?. *Psychology, Public Policy and Law* 2003;**9**(1/2):145–58.

Zanni 1986

Zanni G, DeVeau L. Inpatient stays before and after outpatient commitment. *Hopsital and Community Psychiatry* 1986;**37**(9):941–2.

Additional references

Altman 1996

Altman DG, Bland JM. Detecting skewness from summary information. *BMJ* 1996;**313**:1200.

Bandolier 1995

Anonymous. NNTs and Confidence Intervals. Bandolier 18; available at: URL http://www.jr2.ox.ac.uk/bandolier/band18/b1809.html Aug 1995.

Begg 1996

Begg C, Cho M, Eastwood S, Horton R, Moher D, Olkin I, Pitkin R, Rennie D, Schulz KF, Simel D, Stroup DF. Improving the quality of randomized controlled trials. The CONSORT statement. *JAMA* 1996;**276**:637–9.

Bero 1998

Bero L, Grilli R, Grimshaw J, Oxman A. The Cochrane Effective Practice and Organisation of Care Group (EPOC) Module. In: *The Cochrane Library*, 4, 1998. Oxford: Update Software.

Clarke 2002

Clarke M, Oxman AD. *Cochrane Collaboration Handbook*. Oxford: Update Software, 2002.

Cook 1995

Cook RJ, Sackett DL. The number needed to treat: a clinically useful measure of treatment effect. *BMJ* 1995;**310**:452–4.

Dedman 1990

Dedman P. Community treatment orders in Victoria, Australia. *Psychiatric Bulletin* 1990;**14**:462–4.

Dept of Health 2000

Department of Health. *Reforming the Mental Health Act*. London: Stationery Office, 2000.

Egger 1997

Egger M, Davey Smith G, Schneider M, Minder CE. Bias in meta-analysis detected by a simple, graphical test Bias in meta-analysis detected by a simple graphical test by a simple, graphical test. *BMJ* 1997;**315**:629–34.

Gardner 1993

Gardner W, Hodge SK, Bennett N, et al. Two scales for measuring patients' perceptions for coercion during mental hospital admission. *Behavioural Sciences and the Law* 1993;**20**:301–21.

Gilbody 2002

Gilbody SM, Whitty PA. Improving the delivery and organization of mental health services: beyond the conventional RCT. *British Journal of Psychiatry* 2002;**180**:13–8.

Gray 2001

Gray J, O'Reilly R. Clinically significant differences among Canadian mental health acts. *Canadian Journal of Psychiatry* 2001;**46**:315–21.

Hiday 2002

Hiday VA, Swartz MS, Swanson JW, Borum R, Wagner HR. Impact of outpatient commitment on victimization of people with severe mental illness. *American Journal of Psychiatry* 2002;**159**:1403–11.

Higgins 2003

Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ* 2003;**327**(7414):557–60.

Holloway 1996

Holloway F. Supervised discharge - paper tiger?. *Psychiatric Bulletin* 1996;**20**:193–4.

Hotopf 1999

Hotopf M, Churchill R, Lewis G. Pragmatic randomised controlled trials in psychiatry. *British Journal of Psychiatry* 1999;**175**:217–23.

Kisely 2004

Kisely S, Preston N. Compulsory community treatment and involuntary outpatient treatment for people with severe mental disorders. In: *The Cochrane Library*, Issue 4, 2004. Chichester, UK: John Wiley & Sons, Ltd.

Lansing 1997

Lansing AE, Lyons JS, Martens LC, et al. The treatment of dangerous patients in managed care. Psychiatric hospital utilization and outcome. *General Hospital Psychiatry* 1997;**19**(2):112–8.

Marshall 2000

Marshall M, Lockwood A, Adams C, Bradley C, Joy C, Fenton M. Unpublished rating scales - a major source of bias in randomised controlled trials of treatments for schizophrenia?. *British Journal of Pyschiatry* 2000;**176**:249–52.

Marshall 2003a

Marshall M, Lockwood A. Assertive community treatment for people with severe mental disorders. In: *The Cochrane Library*, 3, 2003. Oxford: Update Software.

Marshall 2003b

Marshall M, Gray A, Lockwood A, Green R. Case management for people with severe mental disorders. In: *The Cochrane Library*, 3, 2003. Oxford: Update Software.

McIvor 1998

McIvor R. The community treatment order: clinical and ethical issues. *Austrailian and New Zealand Journal of Psychiatry* 1998;**32**:223–8.

McIvor 2001

McIvor R. Care and compulsion in community psychiatric treatment work. *Psychiatric Bulletin* 2001;**25**:369–70.

Moher 2001

Moher D, Schulz KF, Altman D. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. *JAMA* 2001;**285**:1987–91.

Moncrieff 2003

Moncrieff J. The politics of a new Mental Health Act. *British Journal of Psychiatry* 2003;**183**:8–9.

Mulvany 1993

Mulvany J. Comulsory community treatment: implications for community health workers. *Australian Journal of Mental Health Nursing* 1993;**2**:183–9.

O'Reilly 2000

O'Reilly R, Keegan D, Elias J. A survey of the use of community treatment orders by psychiatrists in Saskatchewan. *Canadian Journal of Psychiatry* 2000;**45**:79–81.

O'Reilly 2001
O'Reilly R. Does involuntary out-patient treatment work?. *Psychiatric Bulletin* 2001;**25**:371–4.

Pinfold 2001
Pinfold V, Bindman J. Is compulsory community treatment ever justified?. *Psychiatric Bulletin* 2001;**25**:268–70.

Schied-Cook 1987
Schied-Cook TL. Commitment of mentally ill to outpatient treatment. *Community Mental Health* 1987;**23**:183–9.

Steadman 1998b
Steadman HJ, Mulvey EP, Monahan J, Robbins PC, Appelbaum PS, Grisso T, Roth LH, Silver E. Violence by people discharged from acute psychiatric inpatient facilities and by others in the same neighborhoods. *Archives of General Psychiatry* 1998;**55**(5):393–401.

Swartz 1995
Swartz MS, Burns BJ, Hiday VA, George LK, Swanson J, Wagner HR. New directions in research on involuntary outpatient commitment. *Psychiatric Services* 1995;**46**:381–5.

Swartz 1999b
Swartz MS, Swanson JW, Wagner HR, Burns BJ, Hiday VA, Borum R. Can involuntary outpatient commitment reduce hospital recidivism? Findings from a randomised trial with severely mentally ill individuals. *American Journal of Psychiatry* 1999;**156**:1968–75.

Swartz 2001
Swartz MS, Swanson JW, Ryan Wagner H, Burns BJ, Hiday VA. Effects of involuntary outpatient commitment and depot antipsychotics on treatment adherence in persons with severe mental illness. *Journal of Nervous and Mental Disease* 2001;**189**(9):583–92.

Swartz 2002
Swartz MS, Wagner HR, Swanson J, Hiday VA, Burns BJ. The perceived coerciveness of involuntary outpatient commitment: findings from an experimental study. *Journal of American Academy of Psychiatry and the Law* 2002;**30**(2):207–17.

Szmukler 2001
Szmukler G, Hotopf M. Effectiveness of involuntary outpatient commitment. *American Journal of Psychiatry* 2001;**158**(4):653–4.

Torrey 1995
Torrey EF, Kaplan RJ. A national survey of the use of outpatient commitment. *Psychiatric Services* 1995;**46**:778–84.

Wilk 1988
Wilk RJ. Implications of involuntary outpatient commitment for community health agencies. *American Journal of Orthopsychiatry* 1988;**58**:580–91.

** Indicates the major publication for the study*

TABLES

Characteristics of included studies

Study	Steadman 2001
Methods	Allocation: randomised, described. Blindness: not blinded. Duration: 11 months.
Participants	Diagnosis: majority had psychosis. N=152.* Age: over 18 years. Sex: 94 M, 48 F. History: poor compliance with services when discharged. Exclusion criteria: history of violence.
Interventions	1. CCT: enhanced service package + intensive, court-ordered compulsory outpatient commitment, including involuntary medication for people thought by court to lack capacity to give informed consent. N=78. 2. Standard care: enhanced service package with inpatient assessment and comprehensive discharge treatment plan in which patients participated, case management and oversight by OPC co-ordinating plan. N=64.**
Outcomes	Hospitalisation: number of admissions. Compliance: medication. Social adjustment: number of arrests, homelessness. Perceived coercion: MAES. Unable to use - Global state: GAF (no SD).

Characteristics of included studies (*Continued*)

	Hospitalistion: length of stay (no SD). Mental state: PANSS (no SD). Leaving the study early: (data unusable). Quality of life: LBQL (no SD). Adverse effects: various side effects (no SD).
Notes	ITT analysis. *142 completed baseline interview, 10 excluded from all reporting. **There was a suggestion that members of the control group and their case managers thought that they were actually on OPC.
Allocation concealment	B

Study	**Swartz 1999**
Methods	Allocation: randomised. Blindness: not blinded. Duration: 12 months.
Participants	Diagnosis: schizophrenia, schizoaffective disorder or other major psychotic or affective disorder. N=264.* Age: over 18 years. Sex: 132 M, 132 F. History: ill > 1 year, significant functional impairment (NCFAS score >/=90), intensive treatment in past 2 years, awaiting period of court-ordered CCT, only included patients discharged from hospital not those already living in the community. Exclusion criteria: personality disorder, psychoactive substance use disorder, organic brain syndrome in absence of primary psychotic or mood disorder, recent serious act of violence involving injury or use of a weapon.*
Interventions	1. CCT: intensive, court-ordered compulsory outpatient commitment. N=129. 2. Standard care: control group were released from outpatient commitment by notifying the court. N=135.
Outcomes	Hospitalisation: number of admissions. Compliance: medication. Social adjustment: number of arrests, threatening behaviour, homlessness. Perceived coercion: MAES. Victimisation: number of violent or non-violent attacks. Unable to use - Hospitalisation: length of stay (data unusable). Leaving the study early (data unusable).
Notes	* data for this review based only on those randomised to treatment groups and only non-violent participants were randomised. The RCT was supplemented by a non-random post hoc analysis of the intervention group based on duration of involuntary outpatient treatment. Renewals of CCT were not randomised for patients who no longer met legal criteria.
Allocation concealment	B

BSI: Brief Symptom Inventory
CCT: Compulsory community treatment
GAF: Global Assessment of Functioning Scale
ITAQ: Insight and Treatment Attitudes Questionnaire
ITT: Intent-to-treat
LBQL: Lehman Brief Quality of Life Interview
MAES: MacArthur Modified Admission Experience Survey

Characteristics of included studies (*Continued*)

MPCS: MacArthur Perceived Coercion Scale
NCFAS: North Carolina Functional Assessment Scale
OPC: Outpatient commitment
PANSS: Positive and Negative Syndrome Scale

Characteristics of excluded studies

Bindman 2002	Allocation: not randomised, review.
Borum 1999	Allocation: not randomised.
Bursten 1986	Allocation: not randomised.
Fernandez 1990	Allocation: not randomised, no controls.
Geller 1998	Allocation: not randomised.
Greeman 1985	Allocation: not randomised.
Hiday 1987	Allocation: not randomised.
Hiday 1989	Allocation: not randomised.
Hiday 1999	Allocation: not randomised.
Kanter 1995	Allocation: not randomised, review.
Lidz 1999	Allocation: not randomised, review.
Miller 1982	Allocation: not randomised, before and after design.
Miller 1985	Allocation: not randomised, survey of providers.
Munetz 1996	Allocation: not randomised, retropsective design.
NASMHPD 2001	Allocation: not randomised, review.
NHPF 2000	Allocation: not randomised, review.
O'Keefe 1997	Allocation: not randomised, no controls.
Preston 2002	Allocation: not randomised.
Ridgely 2001	Allocation: not randomised.
Rohland 1998	Allocation: not randomised.
Schwartz 1997	Allocation: not randomised.
Schwartz 2001b	Allocation: not randomised.
Sensky 1991	Allocation: not randomised.
Swartz 2001b	Allocation: not randomised.
Van Putten 1988	Allocation: not randomised, no controls.
Vaughan 2000	Allocation: not randomised.
Wagner 2003	Allocation: randomised. Participants: people with schizophrenia, schizoaffective disorder or other major psychotic or affective disorders. Intervention: 1. CCT: intensive court-ordered compulsory outpatient commitment versus 2. Standard care: control group who were released from outpatient commitment by notifying the court. Outcomes: no usable outcomes. Only the number of subsequent out-patient visits were reported, this was considered to be inherent to the process of compulsory community treatment/outpatient commitment and not a result of the interventions.
Zanni 1986	Allocation: not randomised, no controls.

ADDITIONAL TABLES

Table 01. Rating of concealment of allocation

Rating	Description
A	indicates adequate concealment
B	indicates uncertainty about whether allocation was adequately concealed
C	indicates the allocation was definitely not adequately concealed
D	indicates the score was not assigned

Table 02. Rating of the description of randomisation

Rating	Description
A	correct randomised method described
B	randomised method described but incorrect (e.g. every alternate patient given the control treatment)
C	randomised method not described

Table 03. Rating of blinding

Rating	Description
A	blinding of outcome assessor and the participant
B	blinding of outcome assessor only
C	blinding not done

GRAPHS

Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Health service outcomes: 1. Readmission to hospital - by 11-12 months	2	416	Relative Risk (Fixed) 95% CI	0.98 [0.79, 1.21]
02 Health service outcomes: 2. Compliance with medication - by 11-12 months	2	416	Relative Risk (Fixed) 95% CI	0.99 [0.83, 1.19]
03 Patient level outcomes: 1a. Social functioning: trouble with police - by 11-12 months			Relative Risk (Fixed) 95% CI	Subtotals only
04 Patient level outcomes: 1b. Social functioning: homeless - by 11-12 months	2	416	Relative Risk (Fixed) 95% CI	0.67 [0.39, 1.15]
05 Patient level outcomes: 2. Quality of life: victimisation - by 11-12 months	1	264	Relative Risk (Fixed) 95% CI	0.50 [0.31, 0.80]

06 Patient level outcomes: 3. Satisfaction with care: perceived coercion - by 11-12 months	2	416	Relative Risk (Fixed) 95% CI	1.36 [0.97, 1.89]

COVER SHEET

Title	Compulsory community and involuntary outpatient treatment for people with severe mental disorders
Authors	Kisely S, Campbell LA, Preston N
Contribution of author(s)	Steve Kisely - formulated the review question, initially developed the search strategy, conducted the analysis, and wrote the first draft of the review. Leslie Anne Campbell - reviewed and provided comments on the search strategy and review, conducted the analysis Neil Preston - reviewed and provided comments on the search strategy and review, resolved disagreements regarding inclusion/exlusion of studies.
Issue protocol first published	2003/4
Review first published	2005/3
Date of most recent amendment	20 May 2005
Date of most recent SUBSTANTIVE amendment	20 May 2005
What's New	Information not supplied by author
Date new studies sought but none found	Information not supplied by author
Date new studies found but not yet included/excluded	Information not supplied by author
Date new studies found and included/excluded	Information not supplied by author
Date authors' conclusions section amended	Information not supplied by author
Contact address	Dr Steve Kisely Chair in Health Outcomes Department of Psychiatry, Community Health & Epidemiology Dalhousie University Room 425, Centre for Clinical Research HALIFAX NS B3H 1V7 CANADA Telephone: +1 902 494 7075 E-mail: Stephen.Kisely@cdha.nshealth.ca Facsimile: +1 902 494 1597
DOI	10.1002/14651858.CD004408.pub2
Cochrane Library number	CD004408
Editorial group	Cochrane Schizophrenia Group

Editorial group code HM-SCHIZ

GRAPHS AND OTHER TABLES

Fig. 1. Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

01.01 Health service outcomes: 1. Readmission to hospital - by 11-12 months

Review: Compulsory community and involuntary outpatient treatment for people with severe mental disorders

Comparison: 01 COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome: 01 Health service outcomes: 1. Readmission to hospital - by 11-12 months

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Steadman 2001	40/85	27/67		31.9	1.17 [0.81, 1.69]
Swartz 1999	56/129	66/135		68.1	0.89 [0.68, 1.15]
Total (95% CI)	214	202		100.0	0.98 [0.79, 1.21]
Total events: 96 (Treatment), 93 (Control)					
Test for heterogeneity chi-square=1.41 df=1 p=0.23 I^2 =29.2%					
Test for overall effect z=0.21 p=0.8					

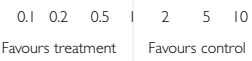


Fig. 2. Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

01.02 Health service outcomes: 2. Compliance with medication - by 11-12 months

Review: Compulsory community and involuntary outpatient treatment for people with severe mental disorders

Comparison: 01 COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome: 02 Health service outcomes: 2. Compliance with medication - by 11-12 months

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Steadman 2001	57/85	47/67		49.4	0.96 [0.77, 1.19]
Swartz 1999	54/129	55/135		50.6	1.03 [0.77, 1.37]
Total (95% CI)	214	202		100.0	0.99 [0.83, 1.19]
Total events: 111 (Treatment), 102 (Control)					
Test for heterogeneity chi-square=0.17 df=1 p=0.68 I^2 =0.0%					
Test for overall effect z=0.09 p=0.9					

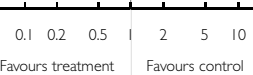


Fig. 3. Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

01.03 Patient level outcomes: 1a. Social functioning: trouble with police - by 11-12 months

Review: Compulsory community and involuntary outpatient treatment for people with severe mental disorders

Comparison: 01 COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome: 03 Patient level outcomes: 1a. Social functioning: trouble with police - by 11-12 months

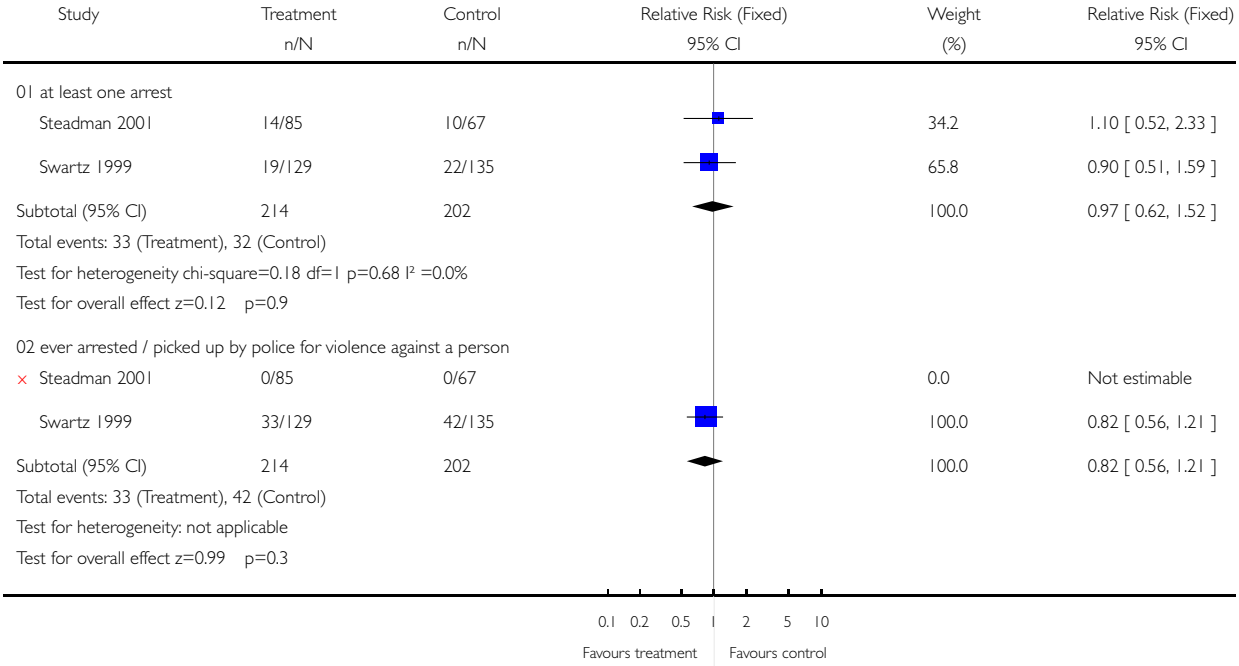


Fig. 4. Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

01.04 Patient level outcomes: 1b. Social functioning: homeless - by 11-12 months

Review: Compulsory community and involuntary outpatient treatment for people with severe mental disorders

Comparison: 01 COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome: 04 Patient level outcomes: 1b. Social functioning: homeless - by 11-12 months

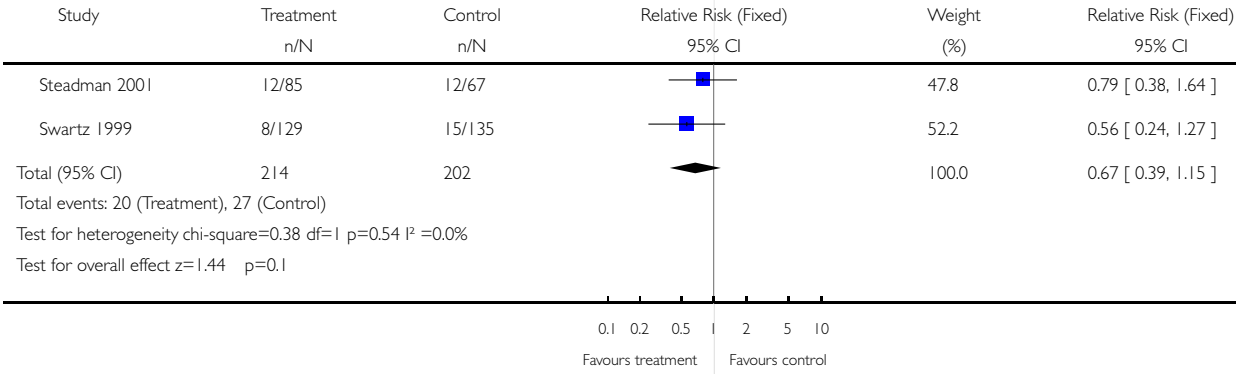


Fig. 5. Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

01.05 Patient level outcomes: 2. Quality of life: victimisation - by 11-12 months

Review: Compulsory community and involuntary outpatient treatment for people with severe mental disorders

Comparison: 01 COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome: 05 Patient level outcomes: 2. Quality of life: victimisation - by 11-12 months

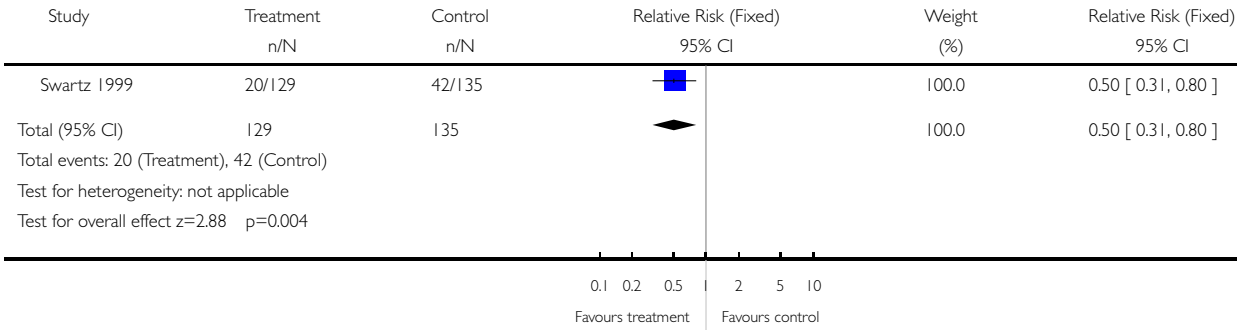


Fig. 6. Comparison 01. COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

01.06 Patient level outcomes: 3. Satisfaction with care: perceived coercion - by 11-12 months

Review: Compulsory community and involuntary outpatient treatment for people with severe mental disorders

Comparison: 01 COMPULSORY COMMUNITY TREATMENT vs STANDARD CARE

Outcome: 06 Patient level outcomes: 3. Satisfaction with care: perceived coercion - by 11-12 months