Case Management for persons with substance use disorders

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Abstract

Background
Patients with alcohol and other drug use disorders (AOD) frequently have multiple social, physical, and mental health treatment needs, yet have difficulty accessing community services, including drug abuse treatment. One strategy for linking patients with AOD with relevant services is case management, where a single case manager is responsible for linking patients with multiple relevant services.

Objectives
To conduct a systematic review of all RCTs on the use of case management for helping drug abusers in or out of treatment. Outcome criteria included successful linkage with other services, illicit drug use outcomes, and a range of related outcomes.

Search strategy

Selection criteria
Randomized controlled studies that compared a specific model of case management with either treatment as usual or another treatment model, included only patients with at least one alcohol or drug related problem.

Data collection and analysis
Two groups of reviewers extracted the data independently. Standardized mean difference was estimated.

Main results
In total, we could extract results from 15 studies. Outcome on illicit drug use was reported from 7 studies with 2391 patients. The effect size for illicit drug use was not significant, and small (standardized mean difference (SMD)=0.12, confidence interval=-0.09,0.29, p=0.20). Substantial heterogeneity was found ($I^2=69.9\%$). Linkage to other treatment services was reported in 10 studies with 3132 patients. The effect size for linkage was moderate (SMD=0.42, 95% confidence interval=0.21 to 0.62, $p<0.001$), but substantial heterogeneity was found ($I^2=85.2\%$). Moderator analyses suggested that a part of the heterogeneity found in linkage studies could be explained by the presence or absence of a treatment manual for case management. A single, large trial of case management with two arms, showed that case management was superior to psychoeducation and drug counselling in reducing drug use.

Authors' conclusions
There is current evidence supporting that case management can enhance linkage with other services. However, evidence that case management reduces drug use or produce other beneficial outcome is not conclusive.
management is a client-centred strategy involving assessment, planning, linking to relevant services and community resources and advocacy. Its intent is to improve the co-ordination and continuity of delivery of services. Brokerage case management sets out to help clients identify their needs and broker services in one or two contacts; intensive case management involves a closer interaction between case manager and client; assertive community treatment (provides assertive outreach and direct counselling services; strengths-based case management focuses on self-direction and the use of informal networks rather than agency resources by applying active outreach. From this review, case management effectively linked people with substance abuse to community and treatment services as compared to treatment as usual or other viable treatment options, such as psycho-education or brief interventions. This conclusion is based on 10 randomized controlled trials involving 3132 participants that compared case management to usual treatment. Two studies compared case management with other specific treatments. Additional analysis of the studies suggested that the use of a manual to guide the delivery of case management could increase linkage. A total of 15 controlled studies that randomized a total of 6694 participants were included in the review. One study was conducted in Europe; all other studies were from North America. Seven studies with 2391 participants did not find a clear reduction in illicit drug use with case management compared with usual treatment; similarly with alcohol use (two studies). A single, large trial showed that case management for heroin users was superior to psycho-education and drug counselling in reducing drug use. The extent of linkage varied significantly between studies, which is likely to be influenced by the availability of services in the community, the model of case management, how effectively it is applied and its integration in the local network of services.

BACKGROUND

According to the World Health Organization, the prevalence of current alcohol dependence in the European Union is estimated to be between 3.8% (Germany) and 12.2% (Poland) of the adult population, while these percentages are around 7.7% and 9.3% in the United States and Canada respectively (WHO 2004). Concerning illicit drug use, the most recent figures indicate that the prevalence of opiate abuse among persons from 15 to 64 years old is around 0.5% in most Western countries (EU, US, Canada and Australia) (UNODC 2005). The prevalence of cocaine abuse is estimated around 1% in the European Union and Australia, but over 2% in Canada and around 3% in the US. The prevalence of amphetamine abuse is generally lower than 1%, but cannabis abuse rates over 10% in several European countries, Canada, the US and Australia (UNODC 2005).

Substance use disorders [SUD] are associated with a wide range of serious health, social and economic complications. The health status of alcohol and drug abusers is generally affected by their substance abuse (de Alba 2004). Consequently, their life expectancy is often much lower than among the general population (Price 2001; Sørensen 2005; Währen 1997). People with alcohol or drug abuse are less likely to be working (Ettner 1997) and alcohol addiction is associated with prematurely leaving the workforce (Romeljso 2004). Housing, relational and judicial problems are also well documented among substance abusers. Drug and alcohol abuse further cause high costs due to frequent and multiple hospitalisations and treatment episodes (Xie 1998a; Xie 1998b). Despite the multi-faceted and complex nature of substance abuse problems, few treatment programs are equipped to provide the expanded array of services necessary to meet clients’ diverse needs (Brindis 1997). Moreover, since substance abuse is increasingly recognised as a chronic and relapsing disorder (McLellan 2002), ongoing support services and continuing care are necessary to assist clients in stabilizing and overcoming their problems. The observation that many substance abusers have significant long-lasting problems in addition to abusing substances has been the main impetus for using case management as an enhancement and supplement to traditional substance abuse treatment services (Vanderplasschen 2004). Case management has a long and relatively successful history for the treatment and support of various mental health populations in the United States, Australia, Canada and several European countries (Burns 2001). From the mid-1980’s on, this intervention was adapted to work with persons with substance abuse disorders and has been applied among specific populations, such as dually diagnosed persons, homeless individuals and substance abusing mothers.

Case management is a client-centred strategy to improve the coordination and continuity of the delivery of services, especially for persons with multiple and complex needs. One of the first definitions has described this intervention as “that part of substance abuse treatment that provides ongoing supportive care to clients and facilitates linking with appropriate helping resources in the community” (Graham 1989). Case management is usually characterized by its basic functions: assessment, planning, linking, monitoring and advocacy (SAMHSA 1998).

Despite the lack of a common definition and divergent practices from place to place, following models of case management are usu-
ally distinguished for working with substance abusers: (1) brokerage case management; (2) generalist/intensive case management; (3) assertive community treatment; (4) clinical case management; (5) strengths-based case management (Vanderplasschen 2004).

The brokerage model is a very brief approach to case management in which case workers attempt to help clients identify their needs and broker ancillary or supportive services, all in one or two contacts. Generalist or standard models utilize the commonly accepted functions of case management (assessment, planning, linking, monitoring, advocacy) and are characterized by a closer involvement between case manager and client. Similarly, intensive case monitoring, advocacy and are characterized by a closer involvement between case manager and client. Assertive Community Treatment (ACT) consists of a 'wrap-around set of services' and assumes a comprehensive role for a team of case managers by providing assertive outreach and direct counselling services, including skills-building, family consultations and crisis intervention. The clinical approach combines resources acquisition (case management) and clinical activities, which might include psychotherapy for clients and their families (Coldwell 2007). Finally, strengths-based case management focuses on clients' strengths, self-direction, and the use of informal help networks (as opposed to agency resources). It further stresses the primacy of the client-case manager relationship and applies an active form of outreach.

As opposed to case management for persons with (severe) mental illness (Coldwell 2007; Zwarenstein 2000; Ziguras 2000), no meta-analysis has yet been published on the effectiveness of this intervention for persons with substance use disorders (Vanderplasschen 2007 in press). The aim of this review is to examine the evidence for the effectiveness of case management for persons with substance use disorders and to identify which aspects of this intervention influence its effectiveness. Social, health and economic outcome measures will be included.

OBJECTIVES

(1) To assess whether case management reduces substance use and improves quality of life compared with other forms of treatment, including 'treatment as usual', standard community treatment, other (non-case management) psychosocial interventions or waitlist controls;

(2) To evaluate whether case management links patients with the services they need and whether this linkage is related to the effects of case management;

(3) To study whether other potential mediating variables (eg, model of case management, type of population served, methodological characteristics of studies) affect case management-outcomes.

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies

Randomized controlled trials that compare a specific case management model with 'treatment as usual' or other non-case management forms of treatment.

Types of participants

Persons with substance use disorders (abuse or dependence of any substance). Studies including people with other mental disorders are eligible, if substance use disorders are present in the entire sample.

Types of intervention

Experimental intervention

Any model of case management (brokerage model, generalist/intensive case management, assertive community treatment, clinical case management, or strengths-based case management)

Control

‘Treatment as usual’, standard community treatment, other psychosocial interventions or waitlist controls

Types of outcome measures

Primary Outcomes

Since case management is a comprehensive intervention with multiple aims, primary outcomes were defined as the 7 problem areas covered by the Addiction Severity Index (ASI) (McLellan 1985), plus living situation. For each of the problem areas, some possible outcome measures are described below. Outcomes must not necessarily be measured by the ASI:

(1) Drug use (eg, self-report, biological markers, problem severity measured by ASI, Drug Abuse Screening Test (DAST) or a similar scale)

(2) Alcohol use (eg, self-report, biological markers, problem severity measured by ASI, Alcohol Use Disorder Identification Test (AUDIT) or a similar scale

(3) Employment and income (eg, number of days working, income from work, daily activities, problem severity measured by ASI)

(4) Physical health (eg, number of days hospitalised for physical problems, SF-36 Health Questionnaire, problem severity measured by ASI)

(5) Legal status (eg, number of days incarcerated, proportion of subjects charged for a (drug-related) offence, problem severity measured by ASI)

(6) Family/social relations (eg, extent of the social network, burden for the family, problem severity measured by ASI)

(7) Mental health (eg, Hamilton rating scale for depression, Beck depression inventory, Symptom Check List-90, psychiatric problem severity measured by ASI)

(8) Living situation (eg, number of days in own house, number of days in sheltered/protected living facility, housing stability)
In case an outcome measure is reported, a single effect size will be computed for each area for each study, by averaging the effect sizes for each indicator.

In case one or more outcome measures were reported, we computed a single effect size for each study by averaging the effect sizes for each problem area.

**Secondary outcomes**

While primary outcomes can be mainly situated at the level of the individual, secondary outcomes rather relate to structural achievements:

- (9) Treatment participation and retention (only reported in trials that compared to active treatments)
- (10) Service utilization, not including case management services. This is defined as 'successful linkage', i.e., getting patients to receive services they need
- (11) Rehospitalisation, including emergency room utilisation
- (12) Satisfaction with the intervention received

**Search methods for identification of studies**

See: methods used in reviews.

Both electronic and manual searches were undertaken to identify studies for this review.

Electronic searches:

Relevant studies that meet the predefined inclusion criteria were identified by searching the following sources from the earliest available date to 2006:

1) The Cochrane Central Register of Controlled Trials (CENTRAL - The Cochrane Library, most recent) which include the Cochrane Drugs and Alcohol Groups specialised register
2) MEDLINE (from 1966 - to present)
3) EMBASE (from 1988 - to present )
4) CINAHL (1982- to present)
5) LILACS (update August 2006)
6) Toxibase (www.toxibase.org) until September 2004.

Search strategy is shown in additional table 2.

There were no language or publication year restrictions.

In addition, the reference lists of retrieved studies, reviews, conference abstracts and grey literature were scanned for other relevant (un)published studies. A search of the registry of ongoing clinical trials was done for identifying ongoing studies, with no language restrictions. If possible, authors of included studies and experts in the field in various countries were contacted to find out if they know any other published or unpublished controlled trials that assess the effectiveness of case management for persons with substance disorders. National focal points for drug and alcohol research (e.g., National Institute on Alcohol Abuse and Alcoholism (NIAAA), National Institute of Drug Abuse (NIDA), National Drug & Alcohol Research Centre (NDARC), European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)) were contacted for information and advice concerning past and ongoing controlled trials on case management.

**Methods of the review**

For conducting the review, two groups of authors (one located in Ghent, Belgium, south group, WV and EB), and one located in Copenhagen, Denmark, and Lund, Sweden, north group, MF and MH) screened and rated the identified and selected studies independently from each other. Below, we indicate with N and S codes who did the specific parts of the review.

1. **Study selection (Broekaert, Fridell, Hess, Rapp)**

Studies were eligible for selection if:

- a specific model of case management was evaluated. Studies could be selected if the intervention was called case management in the report or article and/or consisted of at least 4 of the 5 basic functions of case management, as defined by an American consensus panel of experts (SAMHSA 1998). If it remained unclear whether an intervention could be considered case management according to our criteria, the original authors of the study were contacted.
- a randomized controlled design was used, in which groups were randomly assigned to the experimental and control group;
- the sample consisted of persons with substance use disorders;
- at least one primary outcome measure, as defined in this protocol, was reported;
- the randomization concerned psychosocial interventions. Trials in which the experimental and control group received different pharmacological interventions were excluded.

Two groups of two authors screened the titles and abstracts of all papers initially identified by the electronic and hand searches, in order to reject studies that clearly did not meet the review's inclusion criteria. Next, the full texts of all studies that were identified as potentially eligible were reviewed. The two groups of authors evaluated independently from each other whether a study should be included or not. In case of any disagreement, a third author (R.C. Rapp) was consulted.

All searches will included literature as well. Studies with English abstracts were assessed for inclusion applying the same strategy and criteria. If a study met the inclusion criteria but was in a language which is not understood by any of the authors, the full text of the manuscript were to be translated.

2. **Quality rating**

We evaluate the methodological quality of studies using the Methodological Quality Scale (MQS) developed by Miller and co-workers (Miller 2002). This quality rating scale consists of 12 items, covering various methodological aspects of a clinical...
trial: method of allocation, means for quality control, follow-up rate, follow-up length, type of follow-up contact, use of collateral information, objective verification of the data, inclusion of treatment dropouts in the analyses, dealing with attrition, use of independent interviewers, statistical analyses are appropriate, application of a multi-site design (see Table 01).

In addition, we rated allocation concealment according to the standard Cochrane rating system. This system rates allocation concealment as follows:

A. Low risk of bias: adequate allocation concealment, i.e. central randomization (e.g., allocation by a central office unaware of subject characteristics), pre-numbered or coded identical bottles or containers which are administered serially to participants, drug prepared by the pharmacy, serially numbered, opaque, sealed envelopes, on-site computer system combined with allocations kept in a locked unreadable; computer file that can be accessed only after the characteristics of an enrolled participant have been entered or other description that contained elements convincing of concealment;

B. Moderate risk of bias: unclear allocation concealment, in which the authors either did not report an allocation concealment approach at all or report an approach that did not fall in the category A or C.

C. High risk of bias: inadequate allocation concealment, such as alternation or reference to case numbers, dates of birth, day of the week, or other systematic approach. Any procedure that is entirely transparent before allocation, such as an open list of random numbers or other description that contained elements convincing of not concealment.

D. Not allocation concealment used: when reviewers have not used this method of rating study quality i.e. for studies which are not randomized or quasi-randomized. This code was not used, as only randomized studies are included in the review.

(Higgins 2006). We supplemented these ratings with additional information that is particularly relevant for case management, i.e. the degree of linkage, advocacy, pretreatment assessment, and monitoring in ‘standard treatment’, the use of supervision, and whether a manual was used.

Two teams (south group and north group) conducted quality ratings independently by the two teams, and differences between ratings were discussed until agreement was reached.

3. Extraction (Hesse and Vanderplasschen)

Two raters (WV and MH) independently extracted data. We extracted all relevant data on all outcome measures. For all extracted data, we coded the following information:

- Any relevant data for each of the outcome areas described above: For instance, concerning alcohol use, if a study reported the AUDIT, the ASI alcohol severity, and the percentage of abstinent days for each subject, we registered data that allowed to compute effect sizes for each indicator. Data had to include either means or standard deviations for both the control and experimental group, a proportion for both the control and experimental group or statistics that allow to calculate an effect size, such as a univariate F-statistic, t-statistic or a χ²-statistic with one degree of freedom. For each outcome measure, we recorded data on the degree of change in the experimental and comparison group, when available.

- Report of any references concerning the validity and reliability of outcome measures: The purpose of this coding was to assess whether outcome measures were likely to be reliable and valid. Lack of such references did not necessarily exclude an outcome measure from the analyses, but each outcome measure that has not been published were to be evaluated by the team. Self-report measures such as questionnaires or interviews that have not been published were generally not to be included in the analyses.

- Sample characteristics: the type of substance(s) used and, eventually, the type of co-morbidity was registered.

- Service characteristics: This included information concerning the model of case management, caseload, monitoring of the quality of the intervention, the integration of case management in the network of services.

- Data omission: We screened whether or not there was any indication that data were omitted for reporting (e.g., urine specimens were taken for several drugs, but only the effect sizes for one drug were reported; ASI interviews were conducted, but only one composite score was reported). The purpose of this coding was to assess the possible impact of reporting bias on the results.

- Proportion of eligible subjects who actually entered the study.

We included all effects reported in the meta-analysis. When data were omitted in a publication about a study, we contacted the authors of the original study to retrieve additional data.

4. Analysis (Hesse)

We conducted analyses separately for each outcome measure. In case multiple indicators were reported that were relevant for a single outcome measure (e.g., days abstinent from alcohol, days of heavy drinking, proportion of abstinent subjects), we performed a within-study meta-analysis to derive a single effect size for each outcome measure for each study. If feasible, measures with unknown or unsatisfactory psychometric properties were dropped from such analyses. Exceptions were: data from registers (e.g., criminal justice records, number of hospital admissions), and data related to persons’ living situation (e.g., homeless status, living in temporary accommodation). Also, we used data from urine tests and other biological tests for analyses, even if no specific data on the validity of the test used were provided.

Because the goal of case management is stabilization and improvement of clients’ situation rather than (necessarily) recovery, we reported effect sizes as standardized mean differences (SMD).
We calculated all effect sizes separately during and after treatment (6–12 months follow-up).

In case of missing data, we conducted analyses based on the sample size at the follow-up point for which data are present. We used Random effect models to produce aggregate effect sizes. For continuous measures, we report SMD as effect sizes with Hedge’s correction (Higgins 2006). For a single dichotomous measure, engagement in treatment, we analyzed odds ratios as standardized mean differences at the follow-up point for which data are present. We used Standardized mean differences at the follow-up point for which data are present. We used Random effect models to produce aggregate effect sizes.

A reporting or publication bias is a potential source of uncertainty in any meta-analysis. A publication bias emerges, when several indicators reflecting the same construct are measured, but only the statistically significant effects are reported. This will lead to an inflated effect size, although data are available for meta-analysis. We noted whether data have been omitted to make sure that we attempt to retrieve unpublished data. To establish reasonable boundaries on this file drawer problem, we will calculated the number of unavailable (filed or future) studies averaging null results that would reduce our findings to a nonsignificant level (Rosenthal 1991). Moderator analyses were conducted if Q-tests indicated significant heterogeneity. We did so by subdividing the effect size groupings (outcome areas) further using categorical moderators, where sufficient studies were available (i.e., at least two studies in each category).

In order to identify possible factors influencing the results, we planned a series of subgroup analyses. We intended to perform the following subgroup analyses for primary outcomes:

- Model of case management used: brokerage model, generalist/intensive case management, assertive community treatment, clinical case management, or strengths-based case management.

- Use of pharmacological treatment: trials in which all participants received opiate agonist treatment (e.g., methadone, buprenorphine or LAAM) vs. studies in which none or only some of the participants received opiate agonist treatment. Opiate agonist treatment differs from other interventions for substance abusers in a number of ways, including a much higher retention. If effects were found in the presence of opiate agonist treatment programs that would indicate that case management can be successfully implemented in such programs. If effects were found in medication free programs, case management can be successfully implemented in such programs.

- Degree of co-occurring mental illness: we intended to compare studies of substance abusers with serious mental illness with studies including substance abusers without serious mental illness, since various studies on case management have focused on so-called “dually diagnosed patients”.

- Role of retention and linkage: we intended to compare studies with high effects on retention and linkage (d≥0.4) with studies with low effects on retention and linkage (d<0.4). If high retention and linkage was associated with greater effect sizes, it indicates that the effects of case management are mediated through linkage and retention.

- Degree of change in substance use in the control group (“placebo” response): we intended to compare studies with great improvement in the control group concerning substance use outcomes (d≥0.4 for pre/follow-up) vs. studies with little improvement in the control group on such outcomes (d<0.4 for pre/follow-up). A high degree of change in the control group can be due to client characteristics (e.g., clients entering treatment at a moment when their problems peaked), or to the quality of the services received. In either case, a high degree of change in the control group is likely to mask true effects of case management (Nunes 2004).

- Type of comparison group: studies that compare case management with “treatment as usual” vs. studies that compare it with other viable interventions. While case management may be more effective than referral to regular community or standard services, it may not be differentially more effective than psychotherapy or behavioural interventions, such as contingency management or cognitive-behavioural therapy (Burke 2003; Orwin 1994).

- High vs. low proportion of eligible patients entering the study, based on a “median split”: if studies that reported a high proportion of eligible patients entering the study found lower effects, it would indicate that case management is difficult to deliver in “real-world situations”, in which agencies are required to provide treatment to patients with multiple and complex problems.

- Quality of the study: comparison of high and low quality studies (low MQS <10 vs. high MQS ≥10). A number of reviews have found an inverse relation between the quality of the study and the observed effect size in the literature concerning substance abuse (e.g. Burke 2003; Stanton 1997).

While moderator analyses cannot provide definitive answers to questions about differential effectiveness, they may suggest whether methodological features such as study quality have impacted the observed results (Hesse 2004). The results of the meta-analysis will be reported in RevMan forest plots.

**DESCRIPTIOn of Studies**

Based on the search strategies outlined above, 1230 documents were identified concerning the evaluation of case management and associated interventions for persons with substance use disorders.
Only 78 documents were withheld after a first screening of the abstracts by the two review groups, since most studies concerned another intervention than case management, were not evaluation studies or were applied among other populations than substance abusers. In-depth screening of the 78 selected abstracts led to the acquisition of 51 related studies. Finally, we were able to analyze 15 randomized controlled trials that compared case management with another (non-case management) intervention or standard care, and excluded the remaining 36 studies (see table of excluded studies).

We excluded many studies in the initial screening, because no true randomization was applied for assigning subjects to treatments: in some studies only part of the subjects were randomized, other studies used cluster randomization techniques, or other types of quasi-experimental designs. Also, various studies used ‘blended’ or ‘mixed’ interventions, in which case management was part of a more comprehensive intervention, in which case the specific effect of case management could not be disentangled from the effects of the whole treatment package. Some studies had to be excluded since no appropriate outcome measures were reported in available articles. Finally, some studies could not be included, as they compared the effectiveness of two models of case management in the absence of another control intervention. For substantive descriptions of studies see ‘Characteristics of excluded studies’.

As some of the eligible studies were published as abstracts only or only contained preliminary outcomes, we searched for any subsequent publications in the above-mentioned bibliographical databases and tried to contact the first author of these studies with the same purpose. This led to the identification of two more studies (Corsi 2007; Morgenstern 2006). Furthermore, the reference lists of all retrieved studies and of recently published reviews were scanned for additional relevant publications, which revealed one new study (Zanis 1996) that was not encountered before. In addition, the register of ongoing clinical trials of the US National Institutes of Health was checked, leading to the identification of the German heroin trial, including case management or psycho-educational intervention as accompanying psychosocial services (Naber 2006 a; Naber 2006 b), and four additional ongoing trials that were still recruiting patients (Lucas 2007; Ruf 2006) or collecting data (Carruther 2005; Massey 2005; McKay 2002). For two studies, we were able to obtain unpublished data (Corsi 2007; Rapp 2006).

As already mentioned, the various phases of this search process led to the identification of in total 15 randomized and controlled trials that evaluated the effectiveness of case management compared with another intervention or standard care among persons with substance use problems.

In these 15 included studies, a total of 6694 patients were randomized. At follow-up, data were reported for 5546 patients, or 82.9% of all randomized patients. For substantive descriptions of studies see ‘Characteristics of included studies’.

Countries in which the studies were conducted:
Only one study, with two arms, was conducted in Europe (Naber 2006 a; Naber 2006 b). All remaining studies were from North America.

**Treatment regimes and setting**
We were able to extract data from 11 studies that compared a model of case management with interventions referred to as ‘treatment as usual’ or ‘standard community services’ (Braucht 1995; Coviello 2006; Cox 1998; Martin 1993; Morgenstern 2006; Morse 2006; Rapp 1998; Rhodes 1997; Scott 2002; Sorensen 2005 a; Sorensen 2005 b; Zanis 1996), two studies that compared case management to other active treatments (Corsi 2007; Naber 2006 a; Naber 2006 b), and one study that compared case management to both ‘treatment as usual’ and another active treatment (Rapp 2006). Of the studies, three used the brokerage case management model (Corsi 2007; Scott 2002; Zanis 1996), eight studies with ten arms in total, an intensive case management model (Braucht 1995; Coviello 2006; Cox 1998; Morgenstern 2006; Naber 2006 a; Naber 2006 b; Rhodes 1997; Sorensen 2003, Sorensen 2005 a; Sorensen 2005 b), two the strengths-based case management model (Rapp 1998; Rapp 2006), and two studies used assertive community treatment (Martin 1993; Morse 2006).

It is further important to mention that one study included two different conditions: case management with access to vouchers for free MMT and case management without access to vouchers for MMT (Sorensen 2005 a; Sorensen 2005 b). We decided to split up this study into two comparisons: case management vs. ‘treatment as usual’, and case management + vouchers vs. vouchers alone. Another study reported outcomes separately for two different forms of substitution treatment, i.e., heroin and methadone. In this case, outcomes are reported separately for each medication arm (Naber 2006 a; Naber 2006 b).

**Participants**
The target population in five studies were opiate dependent persons requiring or receiving substitution treatment (Corsi 2007; Coviello 2006; Naber 2006 a; Naber 2006 b; Sorensen 2005 a; Sorensen 2005 b; Zanis 1996), while the study sample in five other studies concerned a mixed population of drug abusers (mainly opiate and cocaine/crack abusers) (Martin 1993; Morgenstern 2006; Rapp 1998; Rapp 2006; Rhodes 1997; Scott 2002; Sorensen 2003). Two of these studies were conducted in criminal justice settings (Martin 1993; Rhodes 1997). Three studies targeted homeless substance abusers: two predominantly consisted of alcohol abusers (Braucht 1995; Cox 1998), and one recruited substance abusers (mainly alcoholics) with co-occurring mental disorders (Morse 2006).

**Methodological quality**

When analyzing the results of the assessment of all included studies with the MQS, inter-rater agreement (with two raters (WV and MH) doing the ratings independently) of the full scale was first evaluated. Agreement on the MQS was estimated using maximum
likelihood random effects regression. Inter-rater agreement of the full scale was adequate (ICC=0.82, 95% confidence interval(CI)=0.63,0.94), with no significant difference between the two raters (p=0.383). Subsequently, all differences were discussed item by item, until an agreement had been reached. Some items showed consistent differences, and a decision had to be made. Some items showed consistent differences, in order that a decision needed to be made. One of these items was the use of the ‘intent-to-treat’ sample versus treatment completers only. We decided that even when it was not explicitly mentioned that the full ‘intent-to-treat’ sample was used for the analyses, we assumed it was done. Another item that showed consistent differences was the use of blinded assessors. In the MQS it is stated that assessors should be both independent and blind to randomization. We decided that if no explicit statement was made that assessors were blind to randomization, a score of zero should be given.

Overall, the methodological quality of the studies varied widely. Assessment of the quality criteria for all included studies can be seen in table 3. MQS-scores ranged from 4-15, with a median of 11.

Two in three studies (n=10) mentioned the use of a manual for guiding the intervention, while eight studies reported some kind of supervision for case managers, in the form of access to senior professionals who could help them stay on track. Characteristics are shown in table 3. Column two lists whether the study reported the use of a manual to guide treatment, and whether that manual was published. Column two shows whether supervision from experts in the case management approach was reported for case managers delivering the experimental treatment. Column 3 shows the MSQ score of the study, and column 5 the status of patients at inclusion to treatment.

Only on study was identified that reported allocation concealment adequately (Sorensen 2005 a; Sorensen 2005 b). The exact model of randomization was never mentioned.

In general, statistical reporting and methods description were highly inadequate. Only in seven studies, the number of subjects screened and number eventually randomized were reported (Coviello 2006; Naber 2006 a; Naber 2006 b; Rapp 2006; Sorensen 2003; Sorensen 2005 a; Sorensen 2005 b; Zanis 1996). Some studies did not mention how many patients were randomized to each intervention, although they did report how many patients were followed up in each group (Corsi 2007; Morse 2006). Of all selected studies, ten reported using some kind of quality control in the form of a manual or service standards for guiding the experimental intervention (Coviello 2006; Martin 1993; Morgenstern 2006; Naber 2006 a; Naber 2006 b; Rapp 1998; Rapp 2006; Sorensen 2003; Sorensen 2005 a; Sorensen 2005 b), but only six reported supervision of case managers (Coviello 2006; Morgenstern 2006; Naber 2006 a; Naber 2006 b; Rapp 1998; Rapp 2006; Sorensen 2003).

Many studies omitted data when reporting the results. Two studies had to be excluded, simply because results were not reported in a format that allowed to extract data for a meta-analysis (e.g., Vaughan 1999; Volpicelli 2000). Furthermore, almost all studies mentioned collecting data on various outcomes that were not reported ultimately. Follow-up rates were higher than 70% for 8 of the 10 studies that included follow-up interviews. The remaining studies reported outcomes based on case files or records in the absence of follow-up interviews (Braucht 1995; Rapp 2006; Scott 2002; Zanis 1996). Follow-up outcomes of some studies need to be commented further, since for one study only a preliminary reports contained data that could be analyzed, while subsequent publications on the full follow-up sample could not be analyzed (Martin 1993). In another study, a small number of subjects that did not receive any aftercare treatment was excluded from the reported data (Rapp 1998). Consequently, the effect size is constrained to the rest of the subjects. Finally, in one study means of ASI composite scores were reported with only one digit, presumably leading to inflated effect sizes because rounding meant that what may have been small differences became close to half a standard deviation (e.g., a difference between 0.1 and 0.2, and a standard deviation of 0.15) (Sorensen 2003).

**RESULTS**

**Case management versus treatment as usual**

Most studies, with the exception of three (Corsi 2007; one arm of Rapp 2006; Naber 2006 a; Naber 2006 b), compared case management with treatment as usual, which is the standard way of referring to treatment or some minimal addition to standard referral procedures.

Concerning primary outcomes, eight comparisons from seven studies were available for illicit drug use (Coviello 2006; Martin 1993; Morgenstern 2006; Rapp 1998; Rhodes 1997; Sorensen 2003; Sorensen 2005 a; Sorensen 2005 b). The overall effect size was SMD 0.12 (CI: -0.06 to 0.29, Z=1.27, p=0.20). Heterogeneity for drug abuse was significant ($\chi^2(7)=23.25$, p=0.002, $I^2=69.9\%$). The fail-safe number of studies was 0, as the result was nonsignificant.

Alcohol use was available for two studies (Cox 1998; Sorensen 2003). The effect was SMD 0.01 (Z=0.03, NS).

Outcomes concerning legal problems was reported by four studies (Martin 1993; Rapp 1998; Rhodes 1997; Sorensen 2003). The overall effect size was nonsignificant (SMD 0.05, CI=-0.05 to 0.15, Z=1.00, p=0.32), and heterogeneity was nonsignificant ($\chi^2(3)=0.06$, p=0.97, $I^2=0\%$). All comparisons favoured case management with similar small effect sizes.

Psychiatric symptoms was reported by two studies, showing no difference between experimental and control (Morse 2006; Sorensen 2003). The effect was small and nonsignificant (SMD 0.01, CI=-0.23 to 0.26; Z=0.10, p=0.92). A number of studies apparently have collected data on psychiatric symptoms but not reported them in a fashion that could be analyzed (Coviello 2006; Cox...
Employment outcomes were mentioned by only one study (Cox 1998). The effect was small and non-significant (SMD=0.08, CI=-0.21 to 0.37).

One study reported outcomes on physical health (Sorensen 2003). The effect was small (SMD=0.30, CI=0.02 to 0.62).

One study reported outcomes on family/social relations (Sorensen 2003). The effect was significant (SMD 0.51, CI=0.18 to 0.83).

Outcomes on living situation was reported by three studies (Cox 2003). The effect was significant (SMD 0.51, CI=0.18 to 0.83).

One study reported outcomes on family/social relations (Sorensen 2003). The effect was small (SMD=0.30, CI=-0.02 to 0.62).

One study reported outcomes on physical health (Sorensen 2003). The effect was small, but significant (SMD=0.23, CI=0.01 to 0.44, Z=2.07, p=0.04), and heterogeneity was nonsignificant ($\chi^2(2)=1.69$, $p=0.43$, $I^2=0\%$).

Concerning secondary outcomes, 11 comparisons from 10 studies were available for successful linkage (Braucht 1995; Coviello 2006; Morgenstern 2006; Naber 2006 a; Naber 2006 b; Scott 2002; Sorensen 2005 a; Sorensen 2005 b; Zannis 1996). The overall effect size was SMD 0.42 (CI: 0.21 to 0.62, Z=4.01, $p<0.0001$). Heterogeneity for linkage was significant ($\chi^2(10)=67.44$, $p<0.00001$, $I^2=85.2\%$). The fail-safe number of studies was 58 using Rosenthal's method.

Since none of the studies reported data on rehospitalization rates that could be extracted, no effect sizes could be computed on this outcome measure. Only one study provided information concerning treatment satisfaction (Morse 2006), showing a non-significant effect that favoured the case management condition (SMD=0.38, CI=0.01 to 0.77).

Four studies reported outcomes on HIV risk behaviour (Coviello 2006; Martin 1993; Rhodes 1997; Sorensen 2003). The effect was small and nonsignificant (SMD=0.04, CI=0.06 to 0.15, Z=0.79, $p=0.43$), and heterogeneity was nonsignificant ($\chi^2(3)=1.02$, $p=0.80$, $I^2=0\%$).

Case management versus other specific treatments
A total of three studies compared case management with other specific treatments, of which one study was divided into two comparisons, as the groups receiving different medications were reported separately (Corsi 2007; Naber 2006 a, Naber 2006 b, Rapp 2006, ). In the German heroin trial, clients were randomized to case management only in a subset of the cities. The results from cities where patients were not randomized to psychosocial treatments were therefore excluded, leaving 711 patients for the analysis (Naber 2006 a; Naber 2006 b).

All of these studies used a less intensive intervention compared with case management, namely variants of motivational interviewing (Corsi 2007; Rapp 2006), or psychoeducation and drug counselling (Naber 2006 a; Naber 2006 b).

Concerning primary outcomes, two comparisons from one study (Naber 2006 a; Naber 2006 b) reported illicit drug use outcomes, and the effect was small, but significant (SMD=0.23, 0.08 to 0.38, Z=3.06, $p=0.002$). There was no significant heterogeneity ($\chi^2(1)=0.28$, $p=0.6$).

One study reported alcohol use outcomes (Sorensen 2003), and the results favoured control, but was nonsignificant (SMD=0.21, CI=0.11 to 0.53).

No study reported legal problems.
No study reported psychiatric symptoms.
No study reported HIV risk behaviour.
Two comparisons from one study reported physical health (Naber 2006 a; Naber 2006 b). The effect was nonsignificant, but favoured case management (SMD=0.07, CI=0.08 to 0.22).

No study reported outcomes of family/social relations.
No study reported outcomes of living situation.
Concerning secondary outcomes, two studies reported linkage outcomes, and the results favoured case management (SMD=0.22, CI=0.08 to 0.38, Z=3.14, $p=0.002$) (Corsi 2007; Rapp 2006).

One study reported engagement in treatment (Rapp 2006), counted as the proportion of randomized patients who began active treatment, and the results favoured case management (OR=3.97, CI=2.51 to 6.27).

Moderator analyses
Due to the small number of studies that reported on most outcome measures, only a few of the planned moderator analyses could be conducted. Moreover, these analyses were only conducted for studies using ‘treatment as usual’ as control condition, and to compare types of control. Moderator analyses were carried out on MetaWin (MetaWin).

Model of case management
Enough studies were available to compare the effect sizes of intensive, brokerage and strengths-based case management. The highest effect was found for strengths-based case management (SMD=0.70), followed by brokerage (SMD=0.33), and intensive case management (0.19). Differences between types of case management were not significant (between $\chi^2(2)=5.52$, p(random)=0.11; within $\chi^2(9)=8.79$, p=0.27).

Manualized vs. nonmanualized
For manualized versus nonmanualized trials, the effect for manualized trials on linkage was 0.56, and for nonmanualized trials, the effect was 0.14. The between heterogeneity was significant ($\chi^2(1)=9.71$, p(random)=0.014), and the heterogeneity within groups was nonsignificant ($\chi^2(11)=14.1$, p=0.23). The effect on drug use was 0.11 for the manualized trials (CI=-0.13 to 0.34), and for the single study with no manual reporting drug use outcomes, the effect was 0.10 (CI=-0.02, 0.22).

Use of pharmacotherapy
Although several studies included patients requiring opioid substitution treatment, most of them concerned patients who were out of treatment when assigned to case management or control.

Degree of co-occurring mental illness
Not enough studies reported on this variable to allow for meaningful comparisons.

High vs. low proportion of eligible patients entering the study
Not enough studies reported on this variable to allow for meaningful comparisons.

**High versus low MQS**
Effects on linkage were 0.45 for studies with high MQS (>= 10), and 0.11 for one study with low MQS (<10). No studies with low MQS reported drug use outcomes. We did two unplanned continuous meta-regression analyses to substitute for the fact that we could not do the planned categorical analyses. The analyses showed that the effect was nonsignificant for drug use outcomes (slope=0.03, p(random)=0.19), as well as for linkage (slope=0.02, p(random)=0.63).

**High versus low linkage**
Effects on drug use was 0.12 in two studies reporting small effects on linkage (Rhodes 1997; Sorensen 2005 a; Sorensen 2005 b), and 0.33 in three studies that reported high effects on linkage (Coviello 2006; Morgenstern 2006; Rapp 1998). The difference was in the expected direction, but was not significant (between $\chi^2(1)=2.56$, p(random)=0.23; within $\chi^2(4)=3.45$, p=0.49).

**Type of control used**
Effects on drug use was 0.12 in the studies that used treatment as usual control and 0.23 in the single study that used another active treatment as control. The combined effect was 0.15 (CI=0.02 to 0.28, Z=2.21, p=0.03). The difference was not significant (between $\chi^2(1)=0.22$, p(random)=0.61; within $\chi^2(10)=11.0$, p=0.36).

Effects on physical health was reported by 2 studies in total, one with treatment as usual and one with active control. A moderator analysis could not be conducted, but the combined effect was 0.11 (CI=-0.02 to 0.24, Z=1.61, p=0.11).

Effects on linkage was 0.42 in the studies with treatment as usual as control, and 0.22 in the two studies with an active control. The combined effect was 0.38 (CI=0.21 to 0.54, Z=4.45, p=0.00001). The difference was not significant (between $\chi^2(1)=0.59$, p(random)=0.54; within $\chi^2(10)=11.26$, p=0.34).

**DISCUSSION**

This meta-analysis concerning the effectiveness of case management for persons with substance use disorders shows that this intervention is effective as a strategy for linking substance abusers to community and treatment services, as compared to treatment as usual or other viable treatment options, such as psycho-education or brief interventions. However, linkage varied significantly between studies. Many factors may influence such outcomes, ranging from the availability of services in the community to the applied model of case management (Vanderplasschen 2004). If community services are either difficult or easy to access, effects of case management may be reduced. In areas where services can easily be accessed, substance abusers in usual care may get a level of services that is close to what case management clients get, whereas in regions where services are very difficult to access, clients may receive few services, even with case management. Other factors that are likely to influence linkage are models of case management, availability of training and supervision, and the degree of integration of case management in the local network of services. Moderator analyses suggested that the use of a manual to guide the case management intervention may be an effective strategy to increase the degree of linkage. Moreover, various authors have identified factors that may enhance linkage such as providing (free) transportation or vouchers for public transport (Laken 1996), case managers’ disposing of money to purchase substance abuse treatment services when necessary services (Mejta 1997) or giving clients vouchers for free treatment (Sorensen 2005 a).

This review does not provide convincing support that case management is as effective to reduce illicit drug use. However, findings were highly heterogeneous, and studies that compared case management with other specific treatment showed a small effect on drug use outcomes. Conclusions concerning all other primary outcome measures seem premature and should be taken with some precautions, due to the low number of studies that reported data that could be extracted for a meta-analysis. We found a moderate, significant effect on housing, based on three studies that compared case management with treatment as usual. Conflicting results were also found concerning alcohol use outcomes, but further research is necessary since it only concerned two studies. Four studies have demonstrated small, non-significant, but consistent effects on legal outcomes. Overall, this meta-analysis suffers from the fact that few of the selected studies have systematically reported on various outcome measures. Its illustrative that the study about which we found most references in the literature search (Vaughan 1999) had to be excluded, since outcome measures were not described in an appropriate way to be calculated in the meta-analysis. Therefore, we hope to get all data on all outcome measures at our disposal for the next update for this review. In addition, a substantial improvement in future studies of case management would be to adopt the consort standard for reporting data.

Also, the methodological quality of the study design was the main reason why several studies were excluded from the meta-analysis. We limited this review to studies that applied true randomization procedures to split up the experimental and control condition, since in the absence of such a design it cannot be guaranteed that differences found between both groups can be attributed to the intervention studied. Furthermore, many authors have studied ‘blended’ or ‘mixed’ models of case management in which this intervention was part of a more comprehensive approach. A number of limitations of studies were also identified. Limitations in the designs identified when going through the literature were were: lack of collateral and objective verification for many outcomes, no reporting on cases lost to follow-up, no independent (blind to randomization) follow-up interviewers, inappropriate data-analyses and a single site-design. To improve the methodological quality of outcome studies on case management, it will therefore be very important to report on true randomization procedures, plan various and also long-term follow-up measurements,
and include other outcome measures than solely self-report, if possible at two or more sites.

Although there is little discussion about the main features of case management from a theoretical point of view, its actual practice may vary a lot, resulting in hybrid models of case management (other than the five models presented), poor fidelity to the intended intervention, lower doses of case management than intended and substantial variation within groups regarding dosage. This study shows that efforts to improve the homogeneity of the intervention delivered (e.g., by manualizing case management) may contribute to its effectiveness - as far as linking is concerned - when compared with non-manualized applications. Moreover, recent research has revealed that it is necessary to measure treatment fidelity in order to estimate to what extent the intended intervention has been delivered. Various recent studies have taken into account this issue of fidelity and treatment fidelity appears to make a difference (Morgenstern 2006; Naber 2006 a; Naber 2006 b; Steffanie 2006). Tools to measure case management-fidelity have been developed in the field of mental health care (cf. Drake 1998), but yet do not seem to be applied frequently among substance abusing populations.

Of all planned moderator analyses only few could be performed, because of a lack of studies for most outcome measures and in each group. Some models of case management may be more effective than others and especially the strengths-based perspective appears to be a promising approach. However, the moderator analyses did not show a significant difference between models, although. This may change with future revisions of this review and as new outcomes become available. We could not compare the effect of case management between subjects with and without co-occurring mental disorders, since not enough studies focused on the former population. This may seem strange, since case management is an extensively studied intervention among mental health populations, but few studies have evaluated this intervention among persons with dual disorders. One study did (Drake 1998), but this study was excluded from the analysis since it compared two models of case management, in the absence of another (non-case management) control condition.

**Authors’ Conclusions**

**Implications for practice**

Our findings suggest that for substance abusers in search of a variety of services (e.g. concerning employment, substance abuse, health and child care), the implementation of (a specific model of) case management is likely to be effective. However, it seems unlikely that case management directly affects primary outcome measures such as substance use, employment, housing, and criminal activities, given the rather small, and mostly non-significant effects found. If case management is expected to also enhance such outcomes substantially, it should be clear that this intervention cannot replace existing (evidence-based) services in the substance abuse treatment system but rather as a complement and reinforcement of such services.

The strengths-based case management appears to be the most effective model, but has only been tested in two clinical trials by a single research group at Wright State University in Dayton, Ohio. When implementing case management, it is probably necessary to manualize the intervention. Whether training and regular supervision of case managers increase the effectiveness of case management remains to be seen. In addition, it is probably useful to measure case management-fidelity to evaluate if the intervention is delivered as intended.

Although we found some evidence that case management is effective for substance abusing populations, it remains unclear which elements and features make this intervention work. Some authors (Rapp 2006) have suggested that the client-driven approach of setting goals and the nature of the client-case manager relationship play a crucial role, but these hypotheses need to be confirmed in future research.

**Implications for research**

This meta-analysis shows that case management approaches are - on average - appropriate to link substance abusers with services they need, but the data remain inconclusive concerning most primary outcome indicators. In, in part, this may be perhaps due to a lack of studies that reported on such outcomes, but it can also be partially and in part due to explained by the heterogeneity observed in these observed outcomes. It is obvious that there is still a lot to explain and that large randomized and controlled trials with high methodological quality that take into account a variety of outcome measures over a considerable follow-up period are most suitable for this purpose.

Few studies have addressed to what extent successful linkage acts as a mediator of other (primary) treatment outcomes, such as criminal involvement and drug use (Martin 1993; Rapp 1998). Such research could provide us with information on the mechanisms behind case management as an intervention. Moreover, although some studies have addressed to what extent implementation issues may affect treatment outcomes (Martin 1993; McLellan 1998), research on effective strategies for implementing case management in ‘real-life’ settings is scarce (compare McLellan 2002). Another issue that has been poorly studied is the effect of case management dosage, since various studies have shown that clients receive varying doses of case management, even in studies with a few case managers or several procedures for standardizing this intervention. It seems that case management dosage is related to problem severity (Vaughan 1999; Naber 2006 a), but it remains unclear if and how it affects outcomes.

Aspects of the case management intervention itself that have not been studied sufficiently are whether brief or time-limited case management is effective for some populations and what is the differential effectiveness of various models of case management. As opposed to the field of mental health care (cf. Coldwell 2007;
Ziguras 2000) few studies have compared different models of case management directly, which might also provide more information on what aspects of case management play a role in its effectiveness. Studies that compared models of case management among substance abusers (e.g. Drake 1998; Vaughan 1999) could not be included, since they did not meet the inclusion criteria. Finally, research on case management should adopt a more strict methodological approach, as well concerning the design and execution of the to both the conduct of research itself, and the concerning the reporting of outcomes. We strongly recommend the use of the CONSORT model of reporting trials (Moher 2001). Although a single fairly recent study has followed the CONSORT recommendations (Sorensen 2005 a; Sorensen 2005 b), several studies have not. The use of the CONSORT will may improve reporting of inclusion and exclusion criteria, screening procedure, randomization approach, treatment model used, and outcomes chosen before the conduct of the trial.

**POTENTIAL CONFLICT OF INTEREST**

Richard C. Rapp is first author and co-author of various RCT’s on case management. He will participate as third reviewer in the selection phase and will only be consulted in case of doubt. He will not be involved in the quality rating and data-extraction and data-analysis. He will be involved in the review process for detecting relevant studies and contacting experts in the field who mainly come from the United States.

**ACKNOWLEDGEMENTS**

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- No sources of support supplied

**REFERENCES**

References to studies included in this review

Braucht 1995  *(published data only)*  

Corsi 2007  *(published and unpublished data)*  

Coviello 2006  *(published data only)*  

Cox 1998  *(published data only)*  

Martin 1993  *(published data only)*  


Morgenstern 2006  *(published data only)*  


Morse 2006  *(published data only)*  


Naber 2006 a  *(published data only)*  
References to studies excluded from this review

Babor 2004

Bond 1991

Catalano 1999

Chan 2005

Conrad 1998

Coughey 1998

Diamond 2002

Drake 1998

Esscock 2006

Godley 2002

Hanlon 1999

Sorensen 2003 a

Sorensen 2005 a

Zanis 1996
Case management for persons with substance use disorders (Review)

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References to ongoing studies

Cartier 2005

Lucas 2007
Lucas GM. Comparison of HIV Clinic-Based Treatment With Buprenorphine Versus Referred Care in Heroin-Dependent Participants. clinicaltrials.gov.

Massey 2005

Ruf 2006

Additional references

Brindis 1997

Burns 2001

Coldwell 2007

de Alba 2004

Ettner 1997

Graham 1989

Hesse 2004

Higgins 2006

**Sørensen 2005**

**UNODC 2005**

**Vanderplasschen 2004**

**Vanderplasschen 2007**

**Wahren 1997**

**WHO 2004**

**Xie 1998a**

**Xie 1998b**

**Ziguras 2000**

**Zwarenstein 2000**

* Indicates the major publication for the study

## Tables

**Characteristics of included studies**

<table>
<thead>
<tr>
<th>Study</th>
<th>Braucht 1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>Randomization: Not reported.</td>
</tr>
<tr>
<td></td>
<td>Blinding: No blinding measures taken.</td>
</tr>
<tr>
<td></td>
<td>Completeness of follow-up: all subjects included.</td>
</tr>
<tr>
<td>Participants</td>
<td>323 homeless substance abusers, mainly alcohol abusers. 163 were allocated to experimental treatment.</td>
</tr>
<tr>
<td>Interventions</td>
<td>Case management supported housing versus housing and treatment as usual</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Linkage. Other outcomes collected, but not reported</td>
</tr>
<tr>
<td>Notes</td>
<td>Most data omitted from article</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>B – Unclear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Corsi 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>Randomization: Not reported.</td>
</tr>
<tr>
<td></td>
<td>Blinding: No blinding measures taken.</td>
</tr>
<tr>
<td></td>
<td>Completeness of follow-up: 76.5% overall</td>
</tr>
<tr>
<td>Participants</td>
<td>642 intravenous drug users recruited through street outreach, age and gender distribution not reported.</td>
</tr>
<tr>
<td>Interventions</td>
<td>Case management versus short interventions</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Treatment initiation</td>
</tr>
<tr>
<td>Notes</td>
<td>Not clear whether other data than treatment admission were collected</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>B – Unclear</td>
</tr>
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</table>
### Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Methods</th>
<th>Participants</th>
<th>Interventions</th>
<th>Outcomes</th>
<th>Notes</th>
<th>Allocation concealment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coviello 2006</td>
<td>Randomization: Not adequately reported. In 2:1 sequence. Blinding: No blinding reported. Follow-up rate: Control: 97% of experimental and 82% of control</td>
<td>128 active out of treatment heroin users, 76 were assigned to experimental treatment, 87% male, mean age 45.</td>
<td>Brokerage Case Management versus passive referral</td>
<td>SR, urine samples, treatment readmission</td>
<td>Only drug and readmission data reported, other omitted</td>
<td>B – Unclear</td>
</tr>
<tr>
<td>Cox 1998</td>
<td>Randomization: Not adequately reported. Blinding: Not reported. Follow-up rate: Varied between 81 and 82% between assessment waves.</td>
<td>189 homeless chronic public inebriates, 80% male, mean age 43.8, 105 assigned to case management.</td>
<td>Case management versus standard community services</td>
<td>Alcohol use, homelessness, employment, alcoholism treatment</td>
<td>All data reported</td>
<td>B – Unclear</td>
</tr>
<tr>
<td>Martin 1993</td>
<td>Randomization: Not adequately reported. Blinding: Not reported. Follow-up rate: 72% overall</td>
<td>455 paroled ex-offenders with a history of intravenous drug use. 72% male, mean age 29, 218 assigned to experimental condition.</td>
<td>Assertive community treatment versus. standard parole</td>
<td>Drug use, reoffending, HIV risk behaviour</td>
<td>Only report from the first 135 patients of 455. No apparent omissions in this report.</td>
<td>B – Unclear</td>
</tr>
<tr>
<td>Morgenstern 2006</td>
<td>Randomization: Used random number generation and a sealed envelope. Blinding of assessment: Apparently blinded assessors were used. Follow-up: Between 82.4 and 89.1% follow-up interviews completed.</td>
<td>Women with illicit drug use problems, mean age 36 years, 70% either heroin or cocaine, 161 assigned to experimental condition</td>
<td>Intensive case management versus usual care</td>
<td>Abstinence from drug use, successful linkage to treatment</td>
<td>Only data on drug use and linkage reported in final article</td>
<td>B – Unclear</td>
</tr>
</tbody>
</table>
### Characteristics of Included Studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Morse 2006</th>
</tr>
</thead>
</table>
| **Methods** | Randomization: Not reported.  
Blinding of assessment: Not reported.  
Follow-up rate: Overall 76% |
| **Participants** | 149 homeless dual diagnosis patients, 80% male, mean age 40 years, 54 included as experimental, 49 as control, the remaining in a different kind of treatment. |
| **Interventions** | Assertive Community treatment versus usual care |
| **Outcomes** | A wide range of outcomes |
| **Notes** | No apparent data omissions |
| **Allocation concealment** | B – Unclear |

<table>
<thead>
<tr>
<th>Study</th>
<th>Naber 2006 a</th>
</tr>
</thead>
</table>
| **Methods** | Randomization: According to previously determined randomization code (block randomization).  
Blinding of assessment: Not reported  
Follow-up rate: Apparently around 90%. Subjects lost to follow-up counted as failures |
| **Participants** | 361 out-of-treatment opioid dependent patients and treatment non-responders, 177 assigned to experimental condition, 78% male, mean age 35.9 |
| **Interventions** | Case management and motivational interviewing versus Psychoeducation and drug counselling |
| **Outcomes** | Drug use and health |
| **Notes** | Subset randomized to heroin maintenance. Only drug use and physical health reported. |
| **Allocation concealment** | B – Unclear |

<table>
<thead>
<tr>
<th>Study</th>
<th>Naber 2006 b</th>
</tr>
</thead>
</table>
| **Methods** | Randomization: According to previously determined randomization code (block randomization).  
Blinding of assessment: Not reported.  
Follow-up rate: Apparently around 90%. Subjects lost to follow-up counted as failures |
| **Participants** | 350 out-of-treatment opioid dependent patients and treatment non-responders, 169 assigned to experimental condition, 78% male, mean age 36.9 years. |
| **Interventions** | Case management and motivational interviewing versus Psychoeducation and drug counselling |
| **Outcomes** | Drug use and health |
| **Notes** | Subset randomized to methadone maintenance. Only drug use and physical health reported. |
| **Allocation concealment** | B – Unclear |

<table>
<thead>
<tr>
<th>Study</th>
<th>Rapp 1998</th>
</tr>
</thead>
</table>
| **Methods** | Randomization: Not reported.  
Blinding of assessment: Not used.  
Follow-up: Experimental: 78%. Control: 73% |
| **Participants** | 632 veterans with cocaine or heroin use or regular other drug use, 313 in case management, 99% male, mean age 38 years. |
| **Interventions** | Strength-based case management versus usual care |
| **Outcomes** | Severity of drug use, post-primary treatment participation |
| **Notes** | Only data on drug use, linkage and legal problems reported in final article. 34 of 478 patients in ITT sample excluded from report. |
| **Allocation concealment** | B – Unclear |
### Characteristics of included studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Rapp 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methods</strong></td>
<td>Randomization: Not reported. Blinding: Reported only data based on file records. Follow-up: Reported only data based on file records.</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>588 substance abusers after assessment at central intake unit, 190 assigned to experimental condition. 63% male, mean age 33.5 years.</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Strengths/based case management versus usual care or motivational interviewing</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Linkage with other treatment services</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>Only data on linkage reported in article.</td>
</tr>
<tr>
<td><strong>Allocation concealment</strong></td>
<td>B – Unclear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Rhodes 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methods</strong></td>
<td>Randomization: Not reported. Blinding: Not reported. Follow-up: Experimental: 86%. Control: 81%.</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>1369 substance abusing arrestees, 74% male, approximately 45% aged 30-39 years, 445 assigned to case management.</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Brokerage case management versus single session or video</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Heavy drug use, treatment entry, legal problems, HIV-risk</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>No apparent omissions of data</td>
</tr>
<tr>
<td><strong>Allocation concealment</strong></td>
<td>B – Unclear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Scott 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methods</strong></td>
<td>Randomization: Not reported. Blinding: Reported data from file records. Follow-up: Reported data from file records.</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>692 patients seeking substance abuse treatment presenting at centralized intake unit, 54% male, mean age 34.7 years, 344 assigned to experimental condition.</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Case management versus treatment as usual</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Show-up for treatment and referral</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>No apparent omissions of data</td>
</tr>
<tr>
<td><strong>Allocation concealment</strong></td>
<td>B – Unclear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Sorensen 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methods</strong></td>
<td>Randomization: Not reported. Blinding: Not reported. Follow-up rate: Experimental: 82%. Control: 77%.</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>190 substance abusers with HIV-infection, 92 assigned to case management. 73% were men, mean age was 38.5 years</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Intensive case management versus brief contact</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Opiate use and reentry into methadone detoxification</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>No apparent omissions of data</td>
</tr>
<tr>
<td><strong>Allocation concealment</strong></td>
<td>B – Unclear</td>
</tr>
<tr>
<td>Study</td>
<td>Sorensen 2005 a</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Methods</td>
<td>Randomization: Using a computer-generated list stratified by time of day. Follow-up: Case management: 91%. Control: 93%.</td>
</tr>
<tr>
<td>Participants</td>
<td>62 drop-outs from a methadone clinic, 77% male, mean age 43 years, 32 assigned to experimental condition.</td>
</tr>
<tr>
<td>Interventions</td>
<td>Intensive case management versus usual care, both with vouchers for treatment</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Opiate use and reentry into methadone detoxification</td>
</tr>
<tr>
<td>Notes</td>
<td>Only drug use, methadone admission, and HIV risk behaviour reported. Other service use reported, but could not be analyzed.</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>A – Adequate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Sorensen 2005 b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>Randomization: Using a computer-generated list stratified by time of day. Follow-up: Case management: 91%. Control: 88%.</td>
</tr>
<tr>
<td>Participants</td>
<td>64 drop-outs from a methadone clinic, 77% male, mean age 43 years, 32 assigned to case management intervention.</td>
</tr>
<tr>
<td>Interventions</td>
<td>Intensive case management versus usual care, both without vouchers for treatment</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Opiate use and reentry into methadone detoxification</td>
</tr>
<tr>
<td>Notes</td>
<td>Only drug use, methadone admission, and HIV risk behaviour reported. Other service use reported, but could not be analyzed.</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>A – Adequate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Zanis 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods</td>
<td>Randomization: Not reported. Blinding: Not reported. Follow-up rates: Not reported. Data reported apparently from file records.</td>
</tr>
<tr>
<td>Participants</td>
<td>41 patients discharged from a methadone maintenance clinic in need of further treatment, all male, mean age 41 years, 27 assigned to experimental condition.</td>
</tr>
<tr>
<td>Interventions</td>
<td>Brokerage case management versus treatment as usual</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Treatment re-entry</td>
</tr>
<tr>
<td>Notes</td>
<td>No apparent omissions of data</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td>B – Unclear</td>
</tr>
</tbody>
</table>

**Characteristics of excluded studies**

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babor 2004</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Case management intervention combined with cognitive behavioural intervention</td>
</tr>
<tr>
<td>Bond 1991</td>
<td>Excluded for study design not in the inclusion criteria: Randomization had not taken place for a subset of the sample</td>
</tr>
<tr>
<td>Catalano 1999</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Intervention not case management</td>
</tr>
<tr>
<td>Chan 2005</td>
<td>Excluded for study design not in the inclusion criteria: Not randomized controlled trial</td>
</tr>
<tr>
<td>Conrad 1998</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Case management combined with residential treatment</td>
</tr>
</tbody>
</table>
### Characteristics of excluded studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coughey 1998</td>
<td>Excluded for study design not in the inclusion criteria: Observational study</td>
</tr>
<tr>
<td>Diamond 2002</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Case management combined with cognitive-behavioural treatment</td>
</tr>
<tr>
<td>Drake 1998</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Compares two models of case management</td>
</tr>
<tr>
<td>Essock 2006</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Compares two models of case management</td>
</tr>
<tr>
<td>Godley 2002</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Intervention combined</td>
</tr>
<tr>
<td>Hanlon 1999</td>
<td>Excluded for study design not in the inclusion criteria: Randomization stopped during trial</td>
</tr>
<tr>
<td>Heineman 2004</td>
<td>Excluded for study design not in the inclusion criteria: Not randomized controlled trial</td>
</tr>
<tr>
<td>Jansson 2003</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>Jerrell 1996</td>
<td>Excluded for study design not in the inclusion criteria: Randomization not followed through. At some point during the study, randomization was terminated, and patients assigned by other criterion</td>
</tr>
<tr>
<td>Kilbride 2000</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>Lapham 1993</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Intervention mixed</td>
</tr>
<tr>
<td>Lehman 1993</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>Lidz 1992</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>McKay 2002</td>
<td>Excluded for study design not in the inclusion criteria: Data could not be retrieved</td>
</tr>
<tr>
<td>McLellan 1998</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>McLellan 1999</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>Mejta 1997</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Case management intervention combined with money available to pay for treatment</td>
</tr>
<tr>
<td>Morse 1997</td>
<td>Excluded for the type of participants not in the inclusion criteria: Not all subjects had substance use disorders</td>
</tr>
<tr>
<td>Needels 2006</td>
<td>Excluded for the type of participants not in the inclusion criteria: Subjects not required to have substance use disorders</td>
</tr>
<tr>
<td>Noel 2006</td>
<td>Excluded for the type of outcomes not in the inclusion criteria: Outcomes reported as multivariate effects only</td>
</tr>
<tr>
<td>Robles 2004</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Case management combined with motivational interviewing</td>
</tr>
<tr>
<td>Rosenblum 2001</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>Ryan 2006</td>
<td>Excluded for study design not in the inclusion criteria: Cluster-randomized trial</td>
</tr>
<tr>
<td>Slesnick 2007</td>
<td>Excluded for the type of intervention not in the inclusion criteria</td>
</tr>
<tr>
<td>Soin 1995</td>
<td>Excluded for the type of intervention not in the inclusion criteria</td>
</tr>
<tr>
<td>Stehler 1995</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Intervention combined with other interventions</td>
</tr>
<tr>
<td>Steffanie 2006</td>
<td>Excluded for study design not in the inclusion criteria: Quasi-experimental study</td>
</tr>
<tr>
<td>Vaughan 1999</td>
<td>Excluded for the type of outcomes not in the inclusion criteria: Data not reported in a format that could be analyzed - authors contacted</td>
</tr>
<tr>
<td>Volpicelli 2000</td>
<td>Excluded for the type of outcomes not in the inclusion criteria: Data reported in a format that did not allow analysis</td>
</tr>
<tr>
<td>Womack 2004</td>
<td>Excluded for study design not in the inclusion criteria: Non-randomized design</td>
</tr>
<tr>
<td>Zatzick 2004</td>
<td>Excluded for the type of intervention not in the inclusion criteria: Intervention combined with other interventions</td>
</tr>
</tbody>
</table>

### Characteristics of ongoing studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Cartier 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial name or title</td>
<td>Transitional Case Management Study</td>
</tr>
</tbody>
</table>
### Characteristics of ongoing studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Lucas 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trial name or title</strong></td>
<td>HIV Clinic-Based Treatment With Buprenorphine Versus Referred Care in Heroin-Dependent Participants</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Opioid-dependent, HIV-infected participants</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Clinic-based treatment vs. case management and referral</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Retention to substance abuse treatment. Drug use, health outcomes.</td>
</tr>
<tr>
<td><strong>Starting date</strong></td>
<td>November 2005</td>
</tr>
<tr>
<td><strong>Contact information</strong></td>
<td>Gregory M. Lucas, MD, PhD 410-614-0560 <a href="mailto:glucas@jhmi.edu">glucas@jhmi.edu</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Massey 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trial name or title</strong></td>
<td>Services Interventions for Injured ED Problem Drinkers</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>ED problem drinkers</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Strengths Based Case Management or motivational Enhancement Therapy or Brief Informational Feedback</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Treatment engagement, alcohol use, health services utilization</td>
</tr>
<tr>
<td><strong>Starting date</strong></td>
<td>Not yet open for patient recruitment</td>
</tr>
<tr>
<td><strong>Contact information</strong></td>
<td>Lynn S Massey MSW tel: 734-998-7454 ext.: 319 <a href="mailto:lsmassey@med.umich.edu">lsmassey@med.umich.edu</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Ruf 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trial name or title</strong></td>
<td>Evaluation of Case Management to Improve the Outpatient Care of Alcohol-Related Disorders</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Alcohol dependents treated in outpatient settings</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td>Comprehensive Quality Management System (CQM) of alcohol-related disorders in primary care</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td>Acceptance of the CQM-system: Number of actively participating practices. Adherence to the system: relative numbers of screened, documented and followed-up patients. Quality of care provided: Patients that are adequately treated and followed-up</td>
</tr>
<tr>
<td><strong>Starting date</strong></td>
<td>July 2006</td>
</tr>
<tr>
<td><strong>Contact information</strong></td>
<td>Daniela Ruf Dipl. Psych. tel: 0049-761-270-6985 <a href="mailto:daniela.ruf@uniklinik-freiburg.de">daniela.ruf@uniklinik-freiburg.de</a></td>
</tr>
</tbody>
</table>
Table 01. The Methodological Quality Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Grade</th>
</tr>
</thead>
</table>
| Group allocation | 4 = true randomization  
|                  | 3 = within-subject counter-balanced  
|                  | 2 = case control/matching  
|                  | 1 = quasi-experimental design; arbitrary/sequential assignment  
|                  | 0 = violated randomization or non-equivalent groups  
|                  | 4 true randomization  
|                  | 3 within-subject counter-balanced  
|                  | 2 case control/matching  
|                  | 1 quasi-experimental design; arbitrary/sequential assignment  
|                  | 0 violated randomization or non-equivalent groups  |
| Quality control  | 1 = treatment standardized by manual, specific training, …  
|                  | 0 = no standardization specified  |
| Follow-up rate   | 2 = 85%-100% of follow-ups completed  
|                  | 1 = 70%-84.9% of follow-ups completed  
|                  | 0 = < 70% of follow-ups completed or follow-up length < 3 months  |
| Follow-up length | 2 = 12 months or longer  
|                  | 1 = 6.0-11.9 months  
|                  | 0 = 6 months or unspecified  |
| Contact          | 1 = personal or telephone contact for 70% of completed follow-ups  
|                  | 0 = questionnaire, unspecified, or < 70% of follow-ups contacted in person or by phone  |
| Collaterals      | 1 = collaterals (e.g., the client's significant others) interviewed in 50% of the cases  
|                  | 0 = no collateral verification in most cases, or unspecified  |
| Objectivity      | 1 = objective verification (records, serum, breath, etc.) in 50% of the cases  
|                  | 0 = no objective verification in most cases, or unspecified  |
| Dropout          | 1 = treatment dropouts included in at least some outcome data (e.g., intent to treat analysis; compared on dependent variable, etc.)  
|                  | 0 = treatment dropouts not discussed or not accounted for (e.g., excluded non-completers from all analyses)  |
| Attrition        | 1 = cases lost to follow-up enumerated and considered in outcome reporting (e.g., counted as failures, compared with non-attrition cases on prior characteristics)  
|                  | 0 = lost cases not enumerated or merely enumerated but not considered in outcome  |
| Independence     | 1 = follow-up done by independent interviewer  
|                  | 0 = follow-up non-blind, unspecified, or questionnaire only  |
| Data-analyses    | 1 = acceptable statistical analyses of group differences  
|                  | 0 = no statistical analyses, inappropriate analyses, or unspecified  |
| Multi-site design| 1 = parallel replications at two or more sites with separate research teams  
|                  | 0 = single site or comparison of sites offering different treatments  |
### Table 02. Search strategies for identification of studies

#### Search strategy

Electronic searches:

Search strategy for MEDLINE database:
1. ((drug or substance$) adj2 (abuse$ or addict$ or dependen$ or misuse)).ti,ab.
2. exp Substance-Related Disorders/
3. 1 or 2
4. cocaine.mp. or exp Cocaine/ or exp Crack Cocaine/
5. exp Heroin/ or heroin
6. (opioid$ or opiate$).ti,ab.
7. alcohol$.ti,ab.
8. exp Narcotics/
9. benzodiazepine.mp. or exp Benzodiazepines/
10. exp Amphetamines/
11. amphetamine.ab,ti.
12. exp Designer drugs/
13. exp Hallucinogens/
15. exp Street drugs/
16. street-drugs.ab,ti.
17. exp Cannabis/
18. cannabis.ab,ti.
19. MARIHUANA.mp.
20. marijuana.ab,ti.
21. exp Opium/
22. Opium.ti,ab.
23. exp Methadone/
24. Methadone.ti,ab.
25. 4/24 OR
26. exp Case Management/
27. (case adj2 management).ti,ab.
29. (assertive adj2 continuing).ti,ab.
30. (continuing adj2 care).ti,ab.
31. exp "Continuity of Patient Care"/
32. exp Substance Abuse Treatment Centers/
33. exp patient-centered care/
34. exp managed care programs/
35. (care adj2 programme adj2 approach).tw.
36. 26/35 OR
37. 3 or 25
38. 37 and 36

combined with the phases 1 & 2 of the Cochrane Sensitive Search Strategy for the identification of RCTs as published in Appendix 5b2, Cochrane Handbook for Systematic Reviews of Interventions:
39. randomized controlled trial.pt.
40. randomized controlled trials/
41. controlled clinical trial.pt.
42. random allocation/
43. double blind method/
44. single blind method/
| Search strategy |
|-----------------
| 45. 39/44 OR |
| 46. clinical trial.pt. |
| 47. exp clinical trials/ |
| 48. ((clin$ adj trial$).ab,ti. |
| 49. ((singl$ or doubl$ or trebl$ or tripl$) adj (blind$ or mask$)).ab,ti |
| 50. exp PLACEBOS/ |
| 51. placebo$.ab,ti |
| 52. random$.ab,ti |
| 53. exp Research Design/ |
| 54. 46/53 OR |
| 55. 45 or 54 |
| 56. limit 50 to human |
| Search strategy for EMBASE database: |
| 1. exp addiction/ |
| 2. (drug or substance) and (abuse$ or misuse$ or addict$ or dependen$)) |
| 3. 1 or 2 |
| 4. exp cocaine/ or exp cocaine derivative/ |
| 5. exp Diamorphine/ |
| 6. heroin.ti,ab. |
| 7. *Opiate/ |
| 8. exp *Benzodiazepine derivative/ or benzodiazepine$.ti,ab. |
| 9. exp *Amphetamine derivative/ or Amphetamine |
| 10. exp alcohol/ or alcohol.ab,ti. |
| 11. *Cannabis/ or *Cannabis derivative/ |
| 12. (marihuana or marijuana).ti,ab. |
| 13. hashish.ti,ab. |
| 14. *Methadone/ or *Methadone treatment/ |
| 15. *Street drug/ |
| 16. 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 |
| 17. exp patient care/ |
| 18. (case adj2 management).ti,ab. |
| 19. exp Mental Health Care/ |
| 20. (assertiv$ adj2 communit$).ti,ab. |
| 22. (continui$ adj2 care).ti,ab. |
| 23. exp Drug Dependence Treatment/ |
| 26. continuity of patient care.tw. |
| 27. 17 or 18 or 19 20 or 21 or 22 or 23 or 24 or 25 or 26 |
| 28. 3 or 16 |
| 29. 28 and 27 |
| 30. random$.ab,ti. |
| 31. placebo.ab,ti. |
| 32. randomized controlled trial/ |
| 33. phase-2-clinical-trial/ |
| 34. phase-3-clinical-trial/ |
| 35. single blind procedure/ |
Table 02. Search strategies for identification of studies  (Continued)

Search strategy

36.crossover procedure/
37.Latin square design/
38.exp PLACEBOS/
39.multicenter study/
40.controlled$.sh.
41.30/40 OR
42.29 and 41
43.limit 42 to human

Search strategy for CINAHL database:
1. exp “Substance Use Disorders”/
2. ((drug or substance) and (addict$ or dependen$ or abuse$ or misuse))
3. 1 or 2
4. exp ALCOHOLISM/
5. exp heroin/ or heroin
6. exp NARCOTICS/
7. exp CRACK COCAINE/ or exp COCAINE/
8. cocaine
9. exp Antianxiety Agents/
10. benzodiazepine
11. exp Amphetamines/
12. exp Barbiturates/ or barbiturates
13. exp Designer Drugs/
14. exp HALLUCINOGENS/
15. exp Street Drugs/
16. exp Lysergic Acid Diethylamide/
17. lsd
18. mdma
19. exp Methylendioxymethamphetamine/
20. ecstasy
21. exp KETAMINE/
22. ketamine
23. exp cannabis/
24. cannabis
25. marihuana or marijuana
26. exp opium/
27. inhalant
28. solvent*
29. (steroid* and abuse)
30. exp anabolic steroids/
31. exp methadone/
32. methadone
33. alcohol
34. 4/33 OR
35. exp Case Management/
36. ((case or care) adj2 management)
37. assertive adj community).ti,ab.
38. exp “Continuity of Patient Care”/
39. (continu$ adj3 care).ti,ab.
40. exp Social Support/
Table 02. Search strategies for identification of studies (Continued)

<table>
<thead>
<tr>
<th>Search strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>41. 35/40 OR</td>
</tr>
<tr>
<td>42. randomi*.tw.</td>
</tr>
<tr>
<td>43. clini*.tw.</td>
</tr>
<tr>
<td>44. trial*.tw.</td>
</tr>
<tr>
<td>45. (clin* and trial*).tw.</td>
</tr>
<tr>
<td>46. (singl* or doubl* or tripl* or trebl*) and (mask$ or blind$)</td>
</tr>
<tr>
<td>47. crossover.tw.</td>
</tr>
<tr>
<td>48. allocate*.tw.</td>
</tr>
<tr>
<td>49. assign*.tw.</td>
</tr>
<tr>
<td>50. (random)* and (allocate* or assign*).tw.</td>
</tr>
<tr>
<td>51. exp Random Assignment/</td>
</tr>
<tr>
<td>52. exp Clinical Trials/</td>
</tr>
<tr>
<td>53. 42/52 OR</td>
</tr>
<tr>
<td>54. 3 or 34</td>
</tr>
<tr>
<td>55. 41 and 54</td>
</tr>
<tr>
<td>55. 54 and 53</td>
</tr>
<tr>
<td>LILACS (update August 2006)</td>
</tr>
<tr>
<td>1.exp Substance-Related Disorders/</td>
</tr>
<tr>
<td>2.((drug or substance) and (addict$ or dependen$ or abuse$ or misuse))</td>
</tr>
<tr>
<td>3.RANDOM$</td>
</tr>
<tr>
<td>4.ALEATORIS or CASUAL or ACASO or AZAR</td>
</tr>
<tr>
<td>5.(DPLP or DOBLE or SIMPLE or TRIPLO or TRIPLE) and (CEGO or CIEGO)</td>
</tr>
<tr>
<td>6.((DOUBL$ or SINGL$ or TRIPL$ or TREBL$) and (BLIND$ or MASK$)</td>
</tr>
<tr>
<td>7.SINGLE-MASKED STUDY/</td>
</tr>
<tr>
<td>8. DOUBLE-MASKED STUDY/</td>
</tr>
<tr>
<td>9.PROPHYLACTIC CONTROLLED TRIALS/</td>
</tr>
<tr>
<td>10.PLACEBO$ and CONTROL$</td>
</tr>
<tr>
<td>11.CLINICAL$ and TRIAL$</td>
</tr>
<tr>
<td>12. #1 or #2</td>
</tr>
<tr>
<td>13.3/11 OR</td>
</tr>
<tr>
<td>14.12 and 13</td>
</tr>
</tbody>
</table>

Toxibase (www.toxibase.org) until September 2004

DRUG DEPENDENCE and case management

Table 03. Additional characteristics of studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Manualized treatment</th>
<th>Supervision</th>
<th>MSQ</th>
<th>Treatment status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Braucht 1995</td>
<td>No</td>
<td>No</td>
<td>5</td>
<td>Treatment seeking</td>
</tr>
<tr>
<td>Corsi 2007</td>
<td>No</td>
<td>No</td>
<td>4</td>
<td>Out of treatment</td>
</tr>
<tr>
<td>Coviello 2006</td>
<td>Unpublished</td>
<td>Some</td>
<td>13</td>
<td>Out of treatment</td>
</tr>
<tr>
<td>Cox 1998</td>
<td>No</td>
<td>No</td>
<td>10</td>
<td>Treatment seeking</td>
</tr>
<tr>
<td>Naber</td>
<td>Published</td>
<td>Intensive</td>
<td>15</td>
<td>Treatment seeking and in-treatment</td>
</tr>
<tr>
<td>Martin 1993</td>
<td>Unpublished</td>
<td>No</td>
<td>11</td>
<td>Out of treatment</td>
</tr>
</tbody>
</table>
Table 03. Additional characteristics of studies  (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Manualized treatment</th>
<th>Supervision</th>
<th>MSQ</th>
<th>Treatment status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morse 2006</td>
<td>Published</td>
<td>Some</td>
<td>11</td>
<td>Out-of-treatment</td>
</tr>
<tr>
<td>Rapp 1998</td>
<td>Published</td>
<td>Some</td>
<td>10</td>
<td>Treatment seeking</td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>Published</td>
<td>Some</td>
<td>13</td>
<td>Treatment seeking</td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>No</td>
<td>Some</td>
<td>11</td>
<td>Out-of-treatment</td>
</tr>
<tr>
<td>Scott 2002</td>
<td>No</td>
<td>Some</td>
<td>11</td>
<td>Out-of-treatment</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>Published</td>
<td>Some</td>
<td>14</td>
<td>Out-of-treatment</td>
</tr>
<tr>
<td>Sorensen 2005</td>
<td>Published</td>
<td>No</td>
<td>11</td>
<td>Out-of-treatment</td>
</tr>
<tr>
<td>Zanis 1996</td>
<td>Unpublished</td>
<td>No</td>
<td>12</td>
<td>Out-of-treatment</td>
</tr>
</tbody>
</table>

ANALYSES

Comparison 01. Case Management versus treatment as usual.

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Illicit drug use outcomes</td>
<td>8</td>
<td>2391</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.12 [-0.06, 0.29]</td>
</tr>
<tr>
<td>02 Alcohol use outcomes</td>
<td>2</td>
<td>340</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.01 [-0.40, 0.42]</td>
</tr>
<tr>
<td>04 Legal problems and criminal behaviour</td>
<td>4</td>
<td>1848</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.05 [-0.05, 0.14]</td>
</tr>
<tr>
<td>05 Psychiatric symptoms</td>
<td>2</td>
<td>254</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.01 [-0.23, 0.26]</td>
</tr>
<tr>
<td>06 Employment</td>
<td></td>
<td></td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>Totals not selected</td>
</tr>
<tr>
<td>07 Physical health</td>
<td>1</td>
<td>151</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.30 [-0.02, 0.62]</td>
</tr>
<tr>
<td>08 Family/social relations</td>
<td></td>
<td></td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>Totals not selected</td>
</tr>
<tr>
<td>09 Living situation</td>
<td>3</td>
<td>344</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.23 [0.01, 0.44]</td>
</tr>
<tr>
<td>11 Treatment satisfaction</td>
<td>1</td>
<td>103</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.38 [-0.01, 0.77]</td>
</tr>
<tr>
<td>12 HIV risk behaviour</td>
<td>4</td>
<td>1516</td>
<td>Standardised Mean Difference (Fixed) 95% CI</td>
<td>0.04 [-0.06, 0.15]</td>
</tr>
<tr>
<td>13 Successful linkage</td>
<td>11</td>
<td>3132</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.42 [0.21, 0.62]</td>
</tr>
</tbody>
</table>
### Comparison 02. Case management versus other specific treatments

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Illicit drug use outcomes</td>
<td>2</td>
<td>711</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.23 [0.08, 0.38]</td>
</tr>
<tr>
<td>07 Physical health</td>
<td>2</td>
<td>711</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.07 [-0.08, 0.22]</td>
</tr>
<tr>
<td>08 Successful linkage</td>
<td>2</td>
<td>887</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.22 [0.08, 0.35]</td>
</tr>
<tr>
<td>12 Engagement in treatment</td>
<td>1</td>
<td>382</td>
<td>Odds Ratio (Random) 95% CI</td>
<td>3.97 [2.51, 6.27]</td>
</tr>
</tbody>
</table>

### Comparison 03. Case management comparison of models

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Drug use</td>
<td>8</td>
<td>2391</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.20 [0.06, 0.35]</td>
</tr>
<tr>
<td>02 Successful linkage</td>
<td>12</td>
<td>3623</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.39 [0.20, 0.57]</td>
</tr>
</tbody>
</table>

### Comparison 04. Case management versus treatment as usual by follow-up times

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Drug use</td>
<td>10</td>
<td>2544</td>
<td>Standardised Mean Difference (Fixed) 95% CI</td>
<td>0.16 [0.08, 0.24]</td>
</tr>
<tr>
<td>02 Successful linkage</td>
<td>14</td>
<td>3661</td>
<td>Standardised Mean Difference (Fixed) 95% CI</td>
<td>0.36 [0.29, 0.42]</td>
</tr>
</tbody>
</table>

### Comparison 05. Case management versus treatment as usual by In-treatment versus out-of-treatment patients

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Illicit drug use</td>
<td>8</td>
<td>2546</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.21 [0.07, 0.35]</td>
</tr>
<tr>
<td>02 Successful Treatment linkage</td>
<td>10</td>
<td>2951</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.41 [0.20, 0.62]</td>
</tr>
</tbody>
</table>

### Comparison 06. Manualized versus non-manualized

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Successful linkage</td>
<td>12</td>
<td>3235</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.44 [0.25, 0.64]</td>
</tr>
<tr>
<td>02 Illicit drug use outcomes</td>
<td>8</td>
<td>2390</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.12 [-0.06, 0.29]</td>
</tr>
</tbody>
</table>
### Comparison 07. Type of control

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Illicit drug use outcomes</td>
<td>10</td>
<td>3102</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.15 [0.02, 0.28]</td>
</tr>
<tr>
<td>02 Successful linkage</td>
<td>13</td>
<td>4019</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.38 [0.21, 0.54]</td>
</tr>
<tr>
<td>03 Physical health</td>
<td>3</td>
<td>862</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.11 [-0.02, 0.24]</td>
</tr>
</tbody>
</table>

### Comparison 08. Low versus high Methodological Quality Scale

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Drug use</td>
<td>7</td>
<td>2280</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.21 [0.06, 0.37]</td>
</tr>
<tr>
<td>02 Successful linkage</td>
<td>11</td>
<td>3132</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.42 [0.21, 0.62]</td>
</tr>
</tbody>
</table>

### Comparison 09. High versus low linkage

<table>
<thead>
<tr>
<th>Outcome title</th>
<th>No. of studies</th>
<th>No. of participants</th>
<th>Statistical method</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Drug use</td>
<td>6</td>
<td>2215</td>
<td>Standardised Mean Difference (Random) 95% CI</td>
<td>0.24 [0.08, 0.41]</td>
</tr>
</tbody>
</table>

---

**C O V E R  S H E E T**

**Title**
Case management for persons with substance use disorders

**Authors**
Hesse M, Vanderplaschen W, Rapp RC, Broekaert E, Fridell M

**Contribution of author(s)**
All authors met and discussed the definition of case management, primary and secondary outcomes to be considered, and contributed to the production of the protocol. Two groups of two reviewers screened the titles and abstracts of all papers initially identified by electronic and hand searches, in order to exclude studies that clearly do not meet the review’s inclusion criteria. Next, full texts of all studies that were identified as potentially eligible were studied. The two groups of reviewers evaluated independently from each other whether a study could be included or not. In case of disagreement, a third reviewer (R.C. Rapp) was consulted. For conducting the review, two groups of reviewers (one located in Ghent (Belgium), referred to as the ‘S’ group (WV+EB), and one located in Copenhagen (Denmark) and Lund (Sweden) (MH + MF), called the ‘N’ group) screened, rated the quality of and extracted data from the selected studies independently from each other. Data-analyses were performed by the first author of the review.

**Issue protocol first published**
2006/4

**Review first published**
2007/4

**Date of most recent amendment**
09 August 2007

**Date of most recent SUBSTANTIVE amendment**
07 August 2007

**What’s New**
Information not supplied by author

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*Case management for persons with substance use disorders (Review)*

Copyright © 2007 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd
### Analysis 01.01. Comparison 01 Case Management versus treatment as usual., Outcome 01 Illicit drug use outcomes

**Review:** Case management for persons with substance use disorders  
**Comparison:** 01 Case Management versus treatment as usual.  
**Outcome:** 01 Illicit drug use outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random) W</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random) W</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>Coviello 2006</td>
<td>71 0.10 (1.00)</td>
<td>40 0.00 (1.00)</td>
<td>10.4 0.10 [ -0.29, 0.49 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martin 1993</td>
<td>56 -0.02 (1.00)</td>
<td>63 0.00 (1.00)</td>
<td>11.2 -0.02 [ -0.38, 0.34 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morgenstern 2006</td>
<td>135 0.58 (1.00)</td>
<td>156 0.00 (1.00)</td>
<td>15.2 0.58 [ 0.34, 0.81 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapp 1998</td>
<td>249 0.24 (1.00)</td>
<td>228 0.00 (1.00)</td>
<td>17.1 0.24 [ 0.06, 0.42 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>395 0.10 (1.00)</td>
<td>734 0.00 (1.00)</td>
<td>18.9 0.10 [ -0.02, 0.22 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>80 0.00 (1.00)</td>
<td>71 0.28 (1.00)</td>
<td>12.4 -0.28 [ -0.60, 0.04 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 a</td>
<td>28 0.03 (1.00)</td>
<td>29 0.00 (1.00)</td>
<td>7.5 0.03 [ -0.49, 0.55 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>28 0.00 (1.00)</td>
<td>28 0.11 (1.00)</td>
<td>7.4 -0.11 [ -0.63, 0.42 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>1042</strong></td>
<td><strong>1349</strong></td>
<td><strong>100.0 0.12</strong> [ <strong>-0.06, 0.29</strong> ]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=23.25 df=7 p=0.002 I² =69.9%
Test for overall effect z=1.27  p=0.2

### Analysis 01.02. Comparison 01 Case Management versus treatment as usual., Outcome 02 Alcohol use outcomes

**Review:** Case management for persons with substance use disorders  
**Comparison:** 01 Case Management versus treatment as usual.  
**Outcome:** 02 Alcohol use outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random) W</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random) W</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>Cox 1998</td>
<td>105 0.21 (1.00)</td>
<td>84 0.00 (1.00)</td>
<td>51.5 0.21 [ -0.08, 0.50 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>80 0.00 (1.00)</td>
<td>71 0.21 (1.00)</td>
<td>48.5 -0.21 [ -0.53, 0.11 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>185</strong></td>
<td><strong>155</strong></td>
<td><strong>100.0 0.01</strong> [ <strong>-0.40, 0.42</strong> ]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=3.62 df=1 p=0.06 I² =72.4%
Test for overall effect z=0.03  p=1
### Analysis 01.04. Comparison 01 Case Management versus treatment as usual, Outcome 04 Legal problems and criminal behaviour

**Review:** Case management for persons with substance use disorders  
**Comparison:** 01 Case Management versus treatment as usual.  
**Outcome:** 04 Legal problems and criminal behaviour

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment N</th>
<th>Treatment Mean(SD)</th>
<th>Control N</th>
<th>Control Mean(SD)</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin 1993</td>
<td>56</td>
<td>0.09 (1.00)</td>
<td>63</td>
<td>0.00 (1.00)</td>
<td>6.8</td>
<td>0.09</td>
<td>[ -0.27, 0.45 ]</td>
</tr>
<tr>
<td>Rapp 1998</td>
<td>223</td>
<td>0.04 (1.00)</td>
<td>226</td>
<td>0.00 (1.00)</td>
<td>25.7</td>
<td>0.04</td>
<td>[ -0.15, 0.22 ]</td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>395</td>
<td>0.05 (1.00)</td>
<td>734</td>
<td>0.00 (1.00)</td>
<td>58.9</td>
<td>0.05</td>
<td>[ -0.07, 0.17 ]</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>0.10 (0.18)</td>
<td>80</td>
<td>0.10 (0.19)</td>
<td>8.6</td>
<td>0.00</td>
<td>[ -0.32, 0.32 ]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>745</strong></td>
<td><strong>1103</strong></td>
<td></td>
<td></td>
<td><strong>100.0</strong></td>
<td><strong>0.05</strong></td>
<td>[ -0.05, 0.14 ]</td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=0.14 df=3 p=0.99 I² =0.0%  
Test for overall effect z=0.96 p=0.3

### Analysis 01.05. Comparison 01 Case Management versus treatment as usual, Outcome 05 Psychiatric symptoms

**Review:** Case management for persons with substance use disorders  
**Comparison:** 01 Case Management versus treatment as usual.  
**Outcome:** 05 Psychiatric symptoms

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment N</th>
<th>Treatment Mean(SD)</th>
<th>Control N</th>
<th>Control Mean(SD)</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morse 2006</td>
<td>54</td>
<td>0.03 (1.00)</td>
<td>49</td>
<td>0.00 (1.00)</td>
<td>40.6</td>
<td>0.03</td>
<td>[ -0.36, 0.42 ]</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>0.00 (1.00)</td>
<td>80</td>
<td>0.00 (1.00)</td>
<td>59.4</td>
<td>0.00</td>
<td>[ -0.32, 0.32 ]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>125</strong></td>
<td><strong>129</strong></td>
<td></td>
<td></td>
<td><strong>100.0</strong></td>
<td><strong>0.01</strong></td>
<td>[ -0.23, 0.26 ]</td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=0.01 df=1 p=0.91 I² =0.0%  
Test for overall effect z=0.01 p=0.9
### Analysis 01.06. Comparison 01 Case Management versus treatment as usual, Outcome 06 Employment

Review: Case management for persons with substance use disorders
Comparison: 01 Case Management versus treatment as usual.
Outcome: 06 Employment

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cox 1998</td>
<td>105</td>
<td>82</td>
<td>0.08 (1.00)</td>
<td>0.00 (1.00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.08 [-0.21, 0.37]</td>
<td></td>
</tr>
</tbody>
</table>

### Analysis 01.07. Comparison 01 Case Management versus treatment as usual, Outcome 07 Physical health

Review: Case management for persons with substance use disorders
Comparison: 01 Case Management versus treatment as usual.
Outcome: 07 Physical health

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>80</td>
<td>0.50 (0.33)</td>
<td></td>
<td>0.40 (0.33)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100.0 0.30 [-0.02, 0.62]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity: not applicable
Test for overall effect z=1.84 p=0.07

### Analysis 01.08. Comparison 01 Case Management versus treatment as usual, Outcome 08 Family/social relations

Review: Case management for persons with substance use disorders
Comparison: 01 Case Management versus treatment as usual.
Outcome: 08 Family/social relations

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>80</td>
<td>0.51 (1.00)</td>
<td>0.00 (1.00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.51 [0.18, 0.83]</td>
<td></td>
</tr>
</tbody>
</table>
### Analysis 01.09. Comparison 01 Case Management versus treatment as usual, Outcome 09 Living situation

Review: Case management for persons with substance use disorders
Comparison: Case Management versus treatment as usual.
Outcome: Living situation

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment N</th>
<th>Mean (SD)</th>
<th>Control N</th>
<th>Mean (SD)</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>95% CI (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cox 1998</td>
<td>105</td>
<td>0.26 (1.00)</td>
<td>84</td>
<td>0.00 (1.00)</td>
<td>0.26 [-0.03, 0.55]</td>
<td>55.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morse 2006</td>
<td>54</td>
<td>0.33 (1.00)</td>
<td>49</td>
<td>0.00 (1.00)</td>
<td>0.33 [-0.06, 0.72]</td>
<td>30.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>20</td>
<td>0.00 (1.00)</td>
<td>32</td>
<td>0.11 (1.00)</td>
<td>-0.11 [-0.67, 0.45]</td>
<td>14.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95%)</td>
<td>179</td>
<td></td>
<td>165</td>
<td></td>
<td>0.23 [0.01, 0.44]</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity: chi-square=1.69 df=2 p=0.43 I² =0.0%
Test for overall effect z=2.07 p=0.04

### Analysis 01.11. Comparison 01 Case Management versus treatment as usual, Outcome 11 Treatment satisfaction

Review: Case management for persons with substance use disorders
Comparison: Case Management versus treatment as usual.
Outcome: Treatment satisfaction

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment N</th>
<th>Mean (SD)</th>
<th>Control N</th>
<th>Mean (SD)</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>95% CI (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morse 2006</td>
<td>54</td>
<td>5.08 (0.88)</td>
<td>49</td>
<td>4.72 (1.00)</td>
<td>0.38 [-0.01, 0.77]</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95%)</td>
<td>54</td>
<td></td>
<td>49</td>
<td></td>
<td>0.38 [-0.01, 0.77]</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity: not applicable
Test for overall effect z=1.91 p=0.06
Analysis 01.12. Comparison 01 Case Management versus treatment as usual., Outcome 12 HIV risk behaviour

Review: Case management for persons with substance use disorders
Comparison: 01 Case Management versus treatment as usual.
Outcome: 12 HIV risk behaviour

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Fixed)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Fixed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covello 2006</td>
<td>71</td>
<td>40</td>
<td>0.00 (1.00)</td>
<td>7.4</td>
<td>-0.08 (-0.47, 0.31)</td>
</tr>
<tr>
<td>Martin 1993</td>
<td>56</td>
<td>63</td>
<td>0.12 (1.00)</td>
<td>8.6</td>
<td>0.12 (-0.24, 0.48)</td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>757</td>
<td>378</td>
<td>0.03 (1.00)</td>
<td>73.1</td>
<td>0.03 (-0.09, 0.15)</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>80</td>
<td>0.15 (1.00)</td>
<td>10.9</td>
<td>0.15 (-0.17, 0.47)</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>955</td>
<td>561</td>
<td>0.04 (-0.06, 0.15)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=1.02 df=3 p=0.80 I² =0.0%
Test for overall effect z=0.79 p=0.4

Analysis 01.13. Comparison 01 Case Management versus treatment as usual., Outcome 13 Successful linkage

Review: Case management for persons with substance use disorders
Comparison: 01 Case Management versus treatment as usual.
Outcome: 13 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Braucht 1995</td>
<td>163</td>
<td>160</td>
<td>0.11 (1.00)</td>
<td>10.5</td>
<td>0.11 [-0.11, 0.33]</td>
</tr>
<tr>
<td>Covello 2006</td>
<td>71</td>
<td>40</td>
<td>0.42 (1.00)</td>
<td>8.3</td>
<td>0.42 [0.03, 0.81]</td>
</tr>
<tr>
<td>Morgenstern 2006</td>
<td>161</td>
<td>141</td>
<td>0.46 (1.00)</td>
<td>10.4</td>
<td>0.46 [0.23, 0.69]</td>
</tr>
<tr>
<td>Morse 2006</td>
<td>54</td>
<td>49</td>
<td>0.75 (1.00)</td>
<td>8.2</td>
<td>0.74 [0.34, 1.14]</td>
</tr>
<tr>
<td>Rapp 1998</td>
<td>248</td>
<td>228</td>
<td>0.89 (1.00)</td>
<td>10.9</td>
<td>0.89 [0.70, 1.08]</td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>190</td>
<td>206</td>
<td>0.50 (1.00)</td>
<td>10.7</td>
<td>0.50 [0.30, 0.70]</td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>199</td>
<td>369</td>
<td>0.08 (1.00)</td>
<td>11.0</td>
<td>0.08 [-0.09, 0.25]</td>
</tr>
<tr>
<td>Scott 2002</td>
<td>344</td>
<td>348</td>
<td>0.17 (1.00)</td>
<td>11.3</td>
<td>0.17 [0.02, 0.32]</td>
</tr>
<tr>
<td>Sorensen 2005 a</td>
<td>30</td>
<td>32</td>
<td>-0.07 (1.00)</td>
<td>7.0</td>
<td>-0.07 [-0.57, 0.43]</td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>29</td>
<td>29</td>
<td>0.37 (1.00)</td>
<td>6.7</td>
<td>0.37 [-0.15, 0.88]</td>
</tr>
<tr>
<td>Zanis 1996</td>
<td>27</td>
<td>14</td>
<td>1.33 (1.00)</td>
<td>4.9</td>
<td>1.30 [0.59, 2.01]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>1516</td>
<td>1616</td>
<td>0.42 [0.21, 0.62]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=67.44 df=10 p<0.0001 I² =85.2%
Test for overall effect z=4.01 p=0.000006
Analysis 02.01. Comparison 02 Case management versus other specific treatments, Outcome 01 Illicit drug use outcomes

Review: Case management for persons with substance use disorders
Comparison: 02 Case management versus other specific treatments
Outcome: 01 Illicit drug use outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naber 2006 a</td>
<td>177</td>
<td>184</td>
<td>0.27 (1.00)</td>
<td>50.7</td>
<td>0.27 [ 0.06, 0.48 ]</td>
</tr>
<tr>
<td>Naber 2006 b</td>
<td>169</td>
<td>181</td>
<td>0.19 (1.00)</td>
<td>49.3</td>
<td>0.19 [-0.02, 0.40 ]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>346</td>
<td>365</td>
<td></td>
<td>100.0</td>
<td>0.23 [ 0.08, 0.38 ]</td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=0.28 df=1 p=0.60 I² =0.0%
Test for overall effect z=3.06 p=0.002

Analysis 02.07. Comparison 02 Case management versus other specific treatments, Outcome 07 Physical health

Review: Case management for persons with substance use disorders
Comparison: 02 Case management versus other specific treatments
Outcome: 07 Physical health

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naber 2006 a</td>
<td>177</td>
<td>184</td>
<td>0.04 (1.00)</td>
<td>50.8</td>
<td>0.04 [-0.17, 0.25 ]</td>
</tr>
<tr>
<td>Naber 2006 b</td>
<td>169</td>
<td>181</td>
<td>0.10 (1.00)</td>
<td>49.2</td>
<td>0.10 [-0.11, 0.31 ]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>346</td>
<td>365</td>
<td></td>
<td>100.0</td>
<td>0.07 [-0.08, 0.22 ]</td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=0.16 df=1 p=0.69 I² =0.0%
Test for overall effect z=0.92  p=0.4
Analysis 02.08. Comparison 02 Case management versus other specific treatments, Outcome 08 Successful linkage

Review: Case management for persons with substance use disorders
Comparison: 02 Case management versus other specific treatments
Outcome: 08 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>Corsi 2007</td>
<td>305</td>
<td>0.19 (1.00)</td>
<td>186</td>
<td>0.00 (1.00)</td>
<td>54.0</td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>190</td>
<td>0.25 (1.00)</td>
<td>206</td>
<td>0.00 (1.00)</td>
<td>46.0</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>495</td>
<td>392</td>
<td>100.0</td>
<td>0.22 [0.08, 0.35]</td>
<td></td>
</tr>
</tbody>
</table>

Test for heterogeneity chi-square=0.19 df=1 p=0.66 I² =0.0%
Test for overall effect z=3.17 p=0.002

Analysis 02.12. Comparison 02 Case management versus other specific treatments, Outcome 12 Engagement in treatment

Review: Case management for persons with substance use disorders
Comparison: 02 Case management versus other specific treatments
Outcome: 12 Engagement in treatment

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Odds Ratio (Random)</th>
<th>Weight</th>
<th>Odds Ratio (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N</td>
<td>n/N</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>153/190</td>
<td>98/192</td>
<td>3.97 [2.51, 6.27]</td>
<td>100.0</td>
<td>3.97 [2.51, 6.27]</td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>190</td>
<td>192</td>
<td>100.0</td>
<td>3.97 [2.51, 6.27]</td>
<td></td>
</tr>
</tbody>
</table>

Total events: 153 (Treatment), 98 (Control)
Test for heterogeneity: not applicable
Test for overall effect z=5.91 p<0.00001
### Analysis 03.01. Comparison 03 Case management comparison of models, Outcome 01 Drug use

Review: Case management for persons with substance use disorders
Comparison: 03 Case management comparison of models
Outcome: 01 Drug use

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean(SD)</td>
<td>N</td>
<td>Mean(SD)</td>
<td>95% CI</td>
</tr>
<tr>
<td>01 Strengths based</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapp 1998</td>
<td>249</td>
<td>0.24 (1.00)</td>
<td>228</td>
<td>0.00 (1.00)</td>
<td>19.1 0.24 [ 0.06, 0.42 ]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>249</td>
<td></td>
<td>228</td>
<td></td>
<td>19.1 0.24 [ 0.06, 0.42 ]</td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=2.60</td>
<td>p=0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Intensive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coviello 2006</td>
<td>71</td>
<td>0.10 (1.00)</td>
<td>40</td>
<td>0.00 (1.00)</td>
<td>9.1 0.10 [ -0.29, 0.49 ]</td>
</tr>
<tr>
<td>Morgenstern 2006</td>
<td>135</td>
<td>0.58 (1.00)</td>
<td>156</td>
<td>0.00 (1.00)</td>
<td>15.7 0.58 [ 0.34, 0.81 ]</td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>395</td>
<td>0.10 (1.00)</td>
<td>734</td>
<td>0.00 (1.00)</td>
<td>22.8 0.10 [ -0.02, 0.22 ]</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>28</td>
<td>0.03 (1.00)</td>
<td>29</td>
<td>0.00 (1.00)</td>
<td>6.0 0.03 [ -0.49, 0.55 ]</td>
</tr>
<tr>
<td>Sorensen 2005 a</td>
<td>28</td>
<td>0.11 (1.00)</td>
<td>28</td>
<td>0.00 (1.00)</td>
<td>5.9 0.11 [ -0.42, 0.63 ]</td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>71</td>
<td>1.70 (1.30)</td>
<td>80</td>
<td>1.30 (1.70)</td>
<td>11.5 0.26 [ -0.06, 0.58 ]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>728</td>
<td></td>
<td>1067</td>
<td></td>
<td>70.9 0.22 [ 0.02, 0.42 ]</td>
</tr>
<tr>
<td>Test for heterogeneity chi-square=13.42 df=5 p=0.02 I² =62.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=2.18</td>
<td>p=0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04 Assertive community treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Martin 1993</td>
<td>56</td>
<td>-0.02 (1.00)</td>
<td>63</td>
<td>0.00 (1.00)</td>
<td>10.0 -0.02 [ -0.38, 0.34 ]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>56</td>
<td></td>
<td>63</td>
<td></td>
<td>10.0 -0.02 [ -0.38, 0.34 ]</td>
</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=0.11</td>
<td>p=0.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>1033</td>
<td></td>
<td>1358</td>
<td></td>
<td>100.0 0.20 [ 0.06, 0.35 ]</td>
</tr>
<tr>
<td>Test for heterogeneity chi-square=15.02 df=7 p=0.04 I² =53.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect z=2.80</td>
<td>p=0.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-1.0 -0.5 0 0.5 1.0
Favours treatment Favours control

---

Case management for persons with substance use disorders (Review)

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## Analysis 03.02. Comparison 03 Case management comparison of models, Outcome 02 Successful linkage

**Review:** Case management for persons with substance use disorders

**Comparison:** 03 Case management comparison of models

**Outcome:** 02 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
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<td>N</td>
<td>Mean(SD)</td>
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<tr>
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<td>248</td>
<td>0.89 (1.00)</td>
<td>228</td>
<td>0.00 (1.00)</td>
<td>9.9</td>
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<tr>
<td>Rapp 2006</td>
<td>190</td>
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<tr>
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<td>434</td>
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<td>19.7</td>
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<tr>
<td>Test for heterogeneity chi-square=7.71 df=1 p=0.006 I² =87.0% Test for overall effect z=3.57 p=0.0004</td>
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<tr>
<td>02 Intensive</td>
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<td>Braucht 1995</td>
<td>163</td>
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<td>0.46 (1.00)</td>
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<td>199</td>
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<td>369</td>
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<td>Scott 2002</td>
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<td>Corsi 2007</td>
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<td>Morse 2006</td>
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<td>0.00 (1.00)</td>
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<tr>
<td>Subtotal (95% CI)</td>
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<tr>
<td>Test for heterogeneity: not applicable Test for overall effect z=3.64 p=0.0003</td>
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<tr>
<td>Total (95% CI)</td>
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<td>1800</td>
<td>0.00 (1.00)</td>
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<td>Test for heterogeneity chi-square=71.41 df=11 p&lt;0.0001 I² =84.6% Test for overall effect z=4.13 p=0.00004</td>
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</tbody>
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**Case management for persons with substance use disorders (Review)**

Copyright © 2007 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd
## Analysis 04.01. Comparison 04 Case management versus treatment as usual by follow-up times, Outcome 01 Drug use

**Review:** Case management for persons with substance use disorders  
**Comparison:** 04 Case management versus treatment as usual by follow-up times  
**Outcome:** 01 Drug use

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Mean(SD)</th>
<th>N</th>
<th>Mean(SD)</th>
<th>Standardised Mean Difference (Fixed)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Fixed)</th>
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<tbody>
<tr>
<td>01 0-6 months follow up</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Covello 2006</td>
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<td>0.10 (1.00)</td>
<td>80</td>
<td>0.00 (1.00)</td>
<td></td>
<td>6.2</td>
<td>0.10 [-0.22, 0.42]</td>
</tr>
<tr>
<td>Martin 1993</td>
<td>56</td>
<td>-0.02 (1.00)</td>
<td>63</td>
<td>0.00 (1.00)</td>
<td></td>
<td>4.9</td>
<td>-0.02 [-0.38, 0.34]</td>
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<td>Rapp 1998</td>
<td>248</td>
<td>0.24 (1.00)</td>
<td>228</td>
<td>0.00 (1.00)</td>
<td></td>
<td>19.5</td>
<td>0.24 [0.06, 0.42]</td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>395</td>
<td>0.10 (1.00)</td>
<td>734</td>
<td>0.00 (1.00)</td>
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<td>42.5</td>
<td>0.10 [-0.02, 0.22]</td>
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<td>28</td>
<td>0.20 (0.14)</td>
<td>29</td>
<td>0.20 (0.13)</td>
<td></td>
<td>2.4</td>
<td>0.00 [-0.52, 0.52]</td>
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<tr>
<td>Sorensen 2005 a</td>
<td>28</td>
<td>0.11 (1.00)</td>
<td>28</td>
<td>0.00 (1.00)</td>
<td></td>
<td>2.3</td>
<td>0.11 [-0.42, 0.63]</td>
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<tr>
<td>Sorensen 2005 b</td>
<td>71</td>
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<td>80</td>
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<td>0.26 [-0.06, 0.58]</td>
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<td>1242</td>
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- Test for heterogeneity chi-square=3.23 df=6 p=0.78 I² =0.0%
- Test for overall effect z=3.03 p=0.002

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<th>N</th>
<th>Mean(SD)</th>
<th>Standardised Mean Difference (Fixed)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Fixed)</th>
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<tr>
<td>Sorensen 2003</td>
<td>28</td>
<td>0.10 (0.12)</td>
<td>29</td>
<td>0.20 (0.13)</td>
<td></td>
<td>2.2</td>
<td>-0.79 [-1.33, -0.25]</td>
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<tr>
<td>Subtotal (95% CI)</td>
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<td>29</td>
<td>2.2</td>
<td>-0.79 [-1.33, -0.25]</td>
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- Test for heterogeneity: not applicable
- Test for overall effect z=2.86 p=0.004

<table>
<thead>
<tr>
<th>Study</th>
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<th>Mean(SD)</th>
<th>N</th>
<th>Mean(SD)</th>
<th>Standardised Mean Difference (Fixed)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Fixed)</th>
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<tr>
<td>03 12+ months follow up</td>
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<td></td>
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<tr>
<td>Morgenstern 2006</td>
<td>135</td>
<td>0.58 (1.00)</td>
<td>156</td>
<td>0.00 (1.00)</td>
<td></td>
<td>11.5</td>
<td>0.58 [0.34, 0.81]</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>28</td>
<td>0.00 (1.00)</td>
<td>29</td>
<td>0.00 (1.00)</td>
<td></td>
<td>2.4</td>
<td>0.00 [-0.52, 0.52]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>163</td>
<td>185</td>
<td>13.9</td>
<td>0.48 [0.27, 0.69]</td>
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</table>

- Test for heterogeneity chi-square=3.96 df=1 p=0.05 I² =74.7%
- Test for overall effect z=4.39 p=0.00001

| Total (95% CI) | 1088| 1456 | 100.0| 0.16 [0.08, 0.24] |                                      |            |                                      |

- Test for heterogeneity chi-square=27.89 df=9 p=0.0010 I² =67.7%
- Test for overall effect z=3.99 p=0.00007

---

Case management for persons with substance use disorders (Review)  
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## Analysis 04.02. Comparison 04 Case management versus treatment as usual by follow-up times, Outcome 02 Successful linkage

**Review:** Case management for persons with substance use disorders

**Comparison:** 04 Case management versus treatment as usual by follow-up times

**Outcome:** 02 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment N</th>
<th>Treatment Mean(SD)</th>
<th>Control N</th>
<th>Control Mean(SD)</th>
<th>Standardised Mean Difference (Fixed)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Fixed)</th>
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<tbody>
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<td><strong>01 0-6 months follow up</strong></td>
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<td>95% CI</td>
<td></td>
<td>95% CI</td>
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<tr>
<td>Covello 2006</td>
<td>71</td>
<td>0.42 (1.00)</td>
<td>40</td>
<td>0.00 (1.00)</td>
<td>2.9 0.42 [ 0.03, 0.81 ]</td>
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<tr>
<td>Morse 2006</td>
<td>54</td>
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<td>4099.00 (6551.00)</td>
<td>2.8 0.70 [ 0.30, 1.10 ]</td>
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<tr>
<td>Rapp 1998</td>
<td>248</td>
<td>0.89 (1.00)</td>
<td>228</td>
<td>0.00 (1.00)</td>
<td>12.4 0.89 [ 0.70, 1.08 ]</td>
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<td>Rapp 2006</td>
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<td>11.0 0.50 [ 0.30, 0.70 ]</td>
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<td>Rhodes 1997</td>
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<td>369</td>
<td>0.00 (1.00)</td>
<td>14.8 0.08 [ -0.09, 0.25 ]</td>
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<tr>
<td>Scott 2002</td>
<td>344</td>
<td>0.17 (1.00)</td>
<td>348</td>
<td>0.00 (1.00)</td>
<td>19.7 0.17 [ 0.02, 0.32 ]</td>
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<tr>
<td>Sorensen 2005 a</td>
<td>30</td>
<td>-0.07 (1.00)</td>
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<td>Sorensen 2005 b</td>
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<td>Zanis 1996</td>
<td>27</td>
<td>1.33 (1.00)</td>
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<td>0.00 (1.00)</td>
<td>0.9 1.30 [ 0.59, 2.01 ]</td>
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<tr>
<td><strong>Subtotal (95% CI)</strong></td>
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<td>1315</td>
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<td>67.7 0.38 [ 0.30, 0.46 ]</td>
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</table>

Test for heterogeneity chi-square=60.64 df=8 p=<0.0001 I² =86.8%
Test for overall effect z=9.24 p=0.00001

| **02 >6-12 months follow up** |             |                    |           |                  | 95% CI                              |            | 95% CI                              |
| Braucht 1995     | 163         | 0.19 (1.00)        | 160       | 0.00 (1.00)      | 9.2 0.19 [ -0.03, 0.41 ]            |            |                                     |
| Morse 2006       | 54          | 11773.00 (10231.00)| 49        | 4500.00 (8011.00)| 2.7 0.78 [ 0.38, 1.18 ]            |            |                                     |
| **Subtotal (95% CI)** | 217         |                    | 209       |                  | 11.9 0.32 [ 0.13, 0.52 ]            |            |                                     |

Test for heterogeneity chi-square=6.43 df=1 p=0.01 I² =84.4%
Test for overall effect z=3.31 p=0.0009

| **03 12+ months follow up** |             |                    |           |                  | 95% CI                              |            | 95% CI                              |
| Braucht 1995     | 163         | 0.01 (1.00)        | 160       | 0.00 (1.00)      | 9.2 0.01 [ -0.21, 0.23 ]            |            |                                     |
| Morgenstern 2006 | 161         | 0.46 (1.00)        | 141       | 0.00 (1.00)      | 8.4 0.46 [ 0.23, 0.69 ]             |            |                                     |
| Morse 2006       | 54          | 12685.00 (10960.00)| 49        | 5023.00 (8491.00)| 2.7 0.77 [ 0.37, 1.17 ]            |            |                                     |
| **Subtotal (95% CI)** | 378         |                    | 350       |                  | 20.3 0.30 [ 0.15, 0.44 ]            |            |                                     |

Test for heterogeneity chi-square=13.93 df=2 p=0.0009 I² =85.6%
Test for overall effect z=3.96 p=0.00008

| **Total (95% CI)** | 1787       | 1874               | 100.0     | 0.36 [ 0.29, 0.42] |                                     |            |                                     |

Test for overall effect z=10.53 p=0.00001

Favours treatment Favours control

---

*Case management for persons with substance use disorders (Review)*

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Analysis 05.01. Comparison 05 Case management versus treatment as usual by In-treatment versus out-of-treatment patients, Outcome 01 Illicit drug use

Review: Case management for persons with substance use disorders
Comparison: 05 Case management versus treatment as usual by In-treatment versus out-of-treatment patients
Outcome: 01 Illicit drug use

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
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<td>Mean(SD)</td>
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<td>Rapp 1998</td>
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<td>0.24 (1.00)</td>
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<td>0.00 (1.00)</td>
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<tr>
<td>Subtotal (95% CI)</td>
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<td></td>
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<td>Test for heterogeneity: not applicable</td>
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<tr>
<td>Test for overall effect z=3.00 p=0.003</td>
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<td>40</td>
<td>0.00 (1.00)</td>
<td>-8.8</td>
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<tr>
<td>Martin 1993</td>
<td>56</td>
<td>-0.02 (1.00)</td>
<td>63</td>
<td>0.00 (1.00)</td>
<td>-9.7</td>
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<td>0.58 (1.00)</td>
<td>156</td>
<td>0.00 (1.00)</td>
<td>15.5</td>
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<tr>
<td>Rhodes 1997</td>
<td>395</td>
<td>0.10 (1.00)</td>
<td>734</td>
<td>0.00 (1.00)</td>
<td>22.8</td>
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<td>Sorensen 2003</td>
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<td>0.03 (1.00)</td>
<td>29</td>
<td>0.00 (1.00)</td>
<td>5.7</td>
</tr>
<tr>
<td>Sorensen 2005 a</td>
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<td>0.11 (1.00)</td>
<td>28</td>
<td>0.00 (1.00)</td>
<td>5.7</td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>71</td>
<td>1.70 (1.30)</td>
<td>80</td>
<td>1.30 (1.70)</td>
<td>11.2</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
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<td>1130</td>
<td>79.5</td>
<td>0.19</td>
<td>[0.01, 0.37]</td>
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<td>Test for heterogeneity chi-square=14.66 df=6 p=0.02 I² =59.1%</td>
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<td>Total (95% CI)</td>
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<td>1449</td>
<td>100.0</td>
<td>0.21</td>
<td>[0.07, 0.35]</td>
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<td>Test for heterogeneity chi-square=15.10 df=7 p=0.03 I² =53.7%</td>
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</tbody>
</table>
## Case Management for Persons with Substance Use Disorders

**Analysis 05.02. Comparison 05 Case management versus treatment as usual by In-treatment versus out-of-treatment patients, Outcome 02 Successful Treatment linkage**

**Review:** Case management for persons with substance use disorders

**Comparison:** 05 Case management versus treatment as usual by In-treatment versus out-of-treatment patients

**Outcome:** 02 Successful Treatment linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
<th>95% CI</th>
<th>95% CI</th>
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<td>N</td>
<td>Mean(SD)</td>
<td>95% CI (%)</td>
<td>95% CI</td>
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<tr>
<td>Rapp 1998</td>
<td>313</td>
<td>0.89 (1.00)</td>
<td>319</td>
<td>0.00 (1.00)</td>
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<tr>
<td>Subtotal (95% CI)</td>
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<td>319</td>
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<td>Test for overall effect z=10.66 p&lt;0.00001</td>
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<tr>
<td>Coviello 2006</td>
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<td>40</td>
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<tr>
<td>Morgenstern 2006</td>
<td>161</td>
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<td>141</td>
<td>0.00 (1.00)</td>
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<tr>
<td>Morse 2006</td>
<td>54</td>
<td>0.75 (1.00)</td>
<td>49</td>
<td>0.00 (1.00)</td>
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<tr>
<td>Rapp 2006</td>
<td>190</td>
<td>0.50 (1.00)</td>
<td>206</td>
<td>0.00 (1.00)</td>
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<tr>
<td>Rhodes 1997</td>
<td>199</td>
<td>0.08 (1.00)</td>
<td>369</td>
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<tr>
<td>Sorensen 2005 a</td>
<td>30</td>
<td>-0.07 (1.00)</td>
<td>32</td>
<td>0.00 (1.00)</td>
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<tr>
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<td>866</td>
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<td>65.7</td>
<td>0.36 [-0.16, 0.56]</td>
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<tr>
<td>Test for heterogeneity chi-square=18.82 df=6 p=0.004 I² =68.1%</td>
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<td>Test for overall effect z=3.54 p=0.0004</td>
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<td><strong>03 Treatment seeking</strong></td>
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</tr>
<tr>
<td>Braucht 1995</td>
<td>163</td>
<td>0.11 (1.00)</td>
<td>160</td>
<td>0.00 (1.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>190</td>
<td>0.50 (1.00)</td>
<td>206</td>
<td>0.00 (1.00)</td>
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<tr>
<td>Subtotal (95% CI)</td>
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<td>366</td>
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<td>0.31 [-0.07, 0.69]</td>
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<tr>
<td>Test for heterogeneity chi-square=6.64 df=1 p=0.010 I² =84.9%</td>
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<td>Test for overall effect z=1.58 p=0.1</td>
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</table>

**Total (95% CI):**

<table>
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<tr>
<th>Total</th>
<th>N</th>
<th>Mean(SD)</th>
<th>N</th>
<th>Mean(SD)</th>
<th>95% CI (%)</th>
<th>95% CI</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1400</td>
<td></td>
<td>1551</td>
<td></td>
<td>100.0</td>
<td>0.41 [0.20, 0.62]</td>
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<tr>
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</tr>
<tr>
<td>Test for overall effect z=3.89 p=0.0001</td>
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</tbody>
</table>

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*Case management for persons with substance use disorders (Review)*

*Copyright © 2007 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd*
### Analysis 06.01. Comparison 06 Manualized versus non-manualized, Outcome 01 Successful linkage

**Review:** Case management for persons with substance use disorders  
**Comparison:** 06 Manualized versus non-manualized  
**Outcome:** 01 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (Mean(SD))</td>
<td>N (Mean(SD))</td>
<td>95% CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>01 Non manualized</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Braucht 1995</td>
<td>163 (0.11)</td>
<td>160 (0.00)</td>
<td>9.7</td>
<td>0.11 [ -0.11, 0.33 ]</td>
<td></td>
</tr>
<tr>
<td>Morse 2006</td>
<td>54 (0.75)</td>
<td>49 (0.00)</td>
<td>7.6</td>
<td>0.74 [ 0.34, 1.14 ]</td>
<td></td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>199 (0.08)</td>
<td>369 (0.00)</td>
<td>10.2</td>
<td>0.08 [ -0.09, 0.25 ]</td>
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<tr>
<td>Scott 2002</td>
<td>344 (0.17)</td>
<td>348 (0.00)</td>
<td>10.4</td>
<td>0.17 [ 0.02, 0.32 ]</td>
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<tr>
<td>Subtotal (95% CI)</td>
<td>760</td>
<td>926</td>
<td>37.9</td>
<td>0.21 [ 0.02, 0.39 ]</td>
<td></td>
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<tr>
<td></td>
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<tr>
<td>02 Manualized</td>
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<tr>
<td>Coviello 2006</td>
<td>71 (0.42)</td>
<td>40 (0.00)</td>
<td>7.7</td>
<td>0.42 [ 0.03, 0.81 ]</td>
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</tr>
<tr>
<td>Morgenstern 2006</td>
<td>161 (0.46)</td>
<td>141 (0.00)</td>
<td>9.6</td>
<td>0.46 [ 0.23, 0.69 ]</td>
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</tr>
<tr>
<td>Morse 2006</td>
<td>54 (0.75)</td>
<td>49 (0.00)</td>
<td>7.6</td>
<td>0.74 [ 0.34, 1.14 ]</td>
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</tr>
<tr>
<td>Rapp 1998</td>
<td>248 (0.89)</td>
<td>228 (0.00)</td>
<td>10.1</td>
<td>0.89 [ 0.70, 1.08 ]</td>
<td></td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>190 (0.50)</td>
<td>206 (0.00)</td>
<td>9.9</td>
<td>0.50 [ 0.30, 0.70 ]</td>
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<tr>
<td>Sorensen 2005 a</td>
<td>30 (-0.07)</td>
<td>32 (0.00)</td>
<td>6.5</td>
<td>-0.07 [ -0.57, 0.43 ]</td>
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<tr>
<td>Sorensen 2005 b</td>
<td>29 (0.37)</td>
<td>29 (0.00)</td>
<td>6.2</td>
<td>0.37 [ -0.15, 0.88 ]</td>
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<tr>
<td>Zanis 1996</td>
<td>27 (1.33)</td>
<td>14 (0.00)</td>
<td>4.5</td>
<td>1.30 [ 0.59, 2.01 ]</td>
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<tr>
<td>Subtotal (95% CI)</td>
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<td>739</td>
<td>62.1</td>
<td>0.56 [ 0.35, 0.78 ]</td>
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<tr>
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<tr>
<td>Total (95% CI)</td>
<td>1570</td>
<td>1665</td>
<td>100.0</td>
<td>0.44 [ 0.25, 0.64 ]</td>
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</tbody>
</table>

Test for heterogeneity chi-square=9.23 df=3 p=0.03 I² =67.5%  
Test for overall effect z=2.20 p=0.03

**Test for heterogeneity chi-square=24.25 df=7 p=0.001 I² =71.1%**  
Test for overall effect z=5.12 p<0.00001

**Total (95% CI)** | 100.0 | 0.44 [ 0.25, 0.64 ] |

**Test for heterogeneity chi-square=70.87 df=11 p=<0.0001 I² =84.5%**  
Test for overall effect z=4.42 p=0.00001
### Analysis 06.02. Comparison 06 Manualized versus non-manualized, Outcome 02 Illicit drug use outcomes

**Review:** Case management for persons with substance use disorders  
**Comparison:** 06 Manualized versus non-manualized  
**Outcome:** 02 Illicit drug use outcomes

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>01 Non-manualized</td>
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</tr>
<tr>
<td>Rhodes 1997</td>
<td>395 0.10 (1.00)</td>
<td>734 0.00 (1.00)</td>
<td>18.9</td>
<td>0.10 [-0.02, 0.22]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>395</td>
<td>734</td>
<td>18.9</td>
<td>0.10 [-0.02, 0.22]</td>
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<tr>
<td>Test for heterogeneity: not applicable</td>
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<tr>
<td>Test for overall effect z=1.60 p=0.1</td>
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</tbody>
</table>

| 02 Manualized | | | | | | | |
| Coviello 2006 | 71 0.10 (1.00) | 40 0.00 (1.00) | 10.4 | 0.10 [-0.29, 0.49] | | |
| Martin 1993 | 56 -0.02 (1.00) | 63 0.00 (1.00) | 11.2 | -0.02 [-0.38, 0.34] | | |
| Margenstern 2006 | 135 0.58 (1.00) | 156 0.00 (1.00) | 15.2 | 0.58 [0.34, 0.81] | | |
| Rapp 1998 | 248 0.24 (1.00) | 228 0.00 (1.00) | 17.1 | 0.24 [0.06, 0.42] | | |
| Sorensen 2003 | 71 0.00 (1.00) | 80 0.28 (1.00) | 12.4 | -0.28 [-0.60, 0.04] | | |
| Sorensen 2005 a | 28 0.03 (1.00) | 29 0.00 (1.00) | 7.5 | 0.03 [-0.49, 0.55] | | |
| Sorensen 2005 b | 28 0.00 (1.00) | 28 0.11 (1.00) | 7.4 | -0.11 [-0.63, 0.42] | | |
| Subtotal (95% CI) | 637 | 624 | 81.1 | 0.11 [-0.13, 0.34] | | |
| Test for heterogeneity chi-square=22.08 df=6 p=0.001 I² =72.8% |
| Test for overall effect z=0.89 p=0.4 |
| Total (95% CI) | 1032 | 1358 | 100.0 | 0.12 [-0.06, 0.29] |
| Test for heterogeneity chi-square=23.24 df=7 p=0.002 I² =69.9% |
| Test for overall effect z=1.27 p=0.2 |
### Analysis 07.01. Comparison 07 Type of control, Outcome 01 Illicit drug use outcomes

#### Review: Case management for persons with substance use disorders

#### Comparison: 07 Type of control

#### Outcome: 01 Illicit drug use outcomes

<table>
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<tr>
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<th>N</th>
<th>Mean(SD)</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
<th>95% CI</th>
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</tr>
<tr>
<td>01 Treatment as usual</td>
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</tr>
<tr>
<td>Coviello 2006</td>
<td>40</td>
<td>71</td>
<td>0.10 (1.00)</td>
<td>0.00 (1.00)</td>
<td>7.2</td>
<td>0.10 [ -0.29, 0.49 ]</td>
<td>3.1</td>
<td>0.10 [ -0.29, 0.49 ]</td>
<td>3.1</td>
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<tr>
<td>Martin 1993</td>
<td>63</td>
<td>56</td>
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<td>0.00 (1.00)</td>
<td>7.9</td>
<td>-0.02 [ -0.38, 0.34 ]</td>
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<td>-0.02 [ -0.38, 0.34 ]</td>
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<td>Morganstern 2006</td>
<td>156</td>
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<td>0.58 (1.00)</td>
<td>0.00 (1.00)</td>
<td>11.7</td>
<td>0.58 [ 0.34, 0.81 ]</td>
<td>2.3</td>
<td>0.58 [ 0.34, 0.81 ]</td>
<td>2.3</td>
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<tr>
<td>Rapp 1998</td>
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<td>249</td>
<td>0.24 (1.00)</td>
<td>0.00 (1.00)</td>
<td>13.7</td>
<td>0.24 [ 0.06, 0.42 ]</td>
<td>3.2</td>
<td>0.24 [ 0.06, 0.42 ]</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>734</td>
<td>395</td>
<td>0.10 (1.00)</td>
<td>0.00 (1.00)</td>
<td>15.8</td>
<td>0.10 [ -0.02, 0.22 ]</td>
<td>2.7</td>
<td>0.10 [ -0.02, 0.22 ]</td>
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<td></td>
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<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>80</td>
<td>0.28 (1.00)</td>
<td>0.00 (1.00)</td>
<td>8.9</td>
<td>-0.28 [ -0.60, 0.04 ]</td>
<td>2.4</td>
<td>-0.28 [ -0.60, 0.04 ]</td>
<td>2.4</td>
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</tr>
<tr>
<td>Sorensen 2005 a</td>
<td>29</td>
<td>28</td>
<td>0.00 (1.00)</td>
<td>0.00 (1.00)</td>
<td>4.9</td>
<td>0.03 [ -0.49, 0.55 ]</td>
<td>1.9</td>
<td>0.03 [ -0.49, 0.55 ]</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>28</td>
<td>28</td>
<td>0.11 (1.00)</td>
<td>0.00 (1.00)</td>
<td>4.8</td>
<td>-0.11 [ -0.63, 0.42 ]</td>
<td>1.9</td>
<td>-0.11 [ -0.63, 0.42 ]</td>
<td>1.9</td>
<td></td>
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<tr>
<td>Subtotal (95% CI)</td>
<td>1349</td>
<td>1042</td>
<td>74.8</td>
<td>0.12 [ -0.06, 0.29 ]</td>
<td>69.9%</td>
<td>Test for heterogeneity chi-square=23.25 df=7 p=0.002 I² =69.9%</td>
<td>Test for overall effect z=1.27 p=0.2</td>
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<tr>
<td>02 Active treatment</td>
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<tr>
<td>Naber 2006 a</td>
<td>184</td>
<td>177</td>
<td>0.27 (1.00)</td>
<td>0.00 (1.00)</td>
<td>12.7</td>
<td>0.27 [ 0.06, 0.48 ]</td>
<td>6.1</td>
<td>0.27 [ 0.06, 0.48 ]</td>
<td>6.1</td>
<td></td>
</tr>
<tr>
<td>Naber 2006 b</td>
<td>181</td>
<td>169</td>
<td>0.19 (1.00)</td>
<td>0.00 (1.00)</td>
<td>12.6</td>
<td>0.19 [ -0.02, 0.40 ]</td>
<td>5.3</td>
<td>0.19 [ -0.02, 0.40 ]</td>
<td>5.3</td>
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</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>365</td>
<td>346</td>
<td>25.2</td>
<td>0.23 [ 0.08, 0.38 ]</td>
<td>0.0%</td>
<td>Test for heterogeneity chi-square=0.28 df=1 p=0.60 I² =0.0%</td>
<td>Test for overall effect z=3.06 p=0.002</td>
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<tr>
<td>Total (95% CI)</td>
<td>1714</td>
<td>1388</td>
<td>100.0</td>
<td>0.15 [ 0.02, 0.28 ]</td>
<td>63.1%</td>
<td>Test for heterogeneity chi-square=24.39 df=9 p=0.004 I² =63.1%</td>
<td>Test for overall effect z=2.21 p=0.03</td>
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<td></td>
</tr>
</tbody>
</table>

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Case management for persons with substance use disorders (Review)  
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### Analysis 07.02. Comparison 07 Type of control, Outcome 02 Successful linkage

**Review:** Case management for persons with substance use disorders

**Comparison:** 07 Type of control

**Outcome:** 02 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment as usual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brauchl 1995</td>
<td>163 0.11 (1.00)</td>
<td>160 0.00 (1.00)</td>
<td>8.8</td>
<td>0.11 [ -0.11, 0.33 ]</td>
<td></td>
</tr>
<tr>
<td>Coviello 2006</td>
<td>71 0.42 (1.00)</td>
<td>40 0.00 (1.00)</td>
<td>6.6</td>
<td>0.42 [ 0.03, 0.81 ]</td>
<td></td>
</tr>
<tr>
<td>Morgenstern 2006</td>
<td>161 0.46 (1.00)</td>
<td>141 0.00 (1.00)</td>
<td>8.7</td>
<td>0.46 [ 0.23, 0.69 ]</td>
<td></td>
</tr>
<tr>
<td>Morse 2006</td>
<td>54 0.75 (1.00)</td>
<td>49 0.00 (1.00)</td>
<td>6.5</td>
<td>0.74 [ 0.34, 1.14 ]</td>
<td></td>
</tr>
<tr>
<td>Rapp 1998</td>
<td>248 0.89 (1.00)</td>
<td>228 0.00 (1.00)</td>
<td>9.2</td>
<td>0.89 [ 0.70, 1.08 ]</td>
<td></td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>190 0.50 (1.00)</td>
<td>206 0.00 (1.00)</td>
<td>9.0</td>
<td>0.50 [ 0.30, 0.70 ]</td>
<td></td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>199 0.08 (1.00)</td>
<td>369 0.00 (1.00)</td>
<td>9.3</td>
<td>0.08 [ -0.09, 0.25 ]</td>
<td></td>
</tr>
<tr>
<td>Scott 2002</td>
<td>344 0.17 (1.00)</td>
<td>348 0.00 (1.00)</td>
<td>9.6</td>
<td>0.17 [ 0.02, 0.32 ]</td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 a</td>
<td>30 -0.07 (1.00)</td>
<td>32 0.00 (1.00)</td>
<td>5.4</td>
<td>-0.07 [ -0.57, 0.43 ]</td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>29 0.37 (1.00)</td>
<td>29 0.00 (1.00)</td>
<td>5.2</td>
<td>0.37 [ -0.15, 0.88 ]</td>
<td></td>
</tr>
<tr>
<td>Zanis 1996</td>
<td>27 1.33 (1.00)</td>
<td>14 0.00 (1.00)</td>
<td>3.6</td>
<td>1.30 [ 0.59, 2.01 ]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>1516</td>
<td>1616</td>
<td>81.7</td>
<td>0.42 [ 0.21, 0.62 ]</td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity</td>
<td>chi-square=67.44 df=10 p=&lt;0.0001</td>
<td>I² =85.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect</td>
<td>z=4.01 p=0.00006</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 Active control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corsi 2007</td>
<td>305 0.19 (1.00)</td>
<td>186 0.00 (1.00)</td>
<td>9.2</td>
<td>0.19 [ 0.01, 0.37 ]</td>
<td></td>
</tr>
<tr>
<td>Rapp 2006</td>
<td>190 0.25 (1.00)</td>
<td>206 0.00 (1.00)</td>
<td>9.0</td>
<td>0.25 [ 0.05, 0.45 ]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>495</td>
<td>392</td>
<td>18.3</td>
<td>0.22 [ 0.08, 0.35 ]</td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity</td>
<td>chi-square=0.19 df=1 p=0.66</td>
<td>I² =0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect</td>
<td>z=3.17 p=0.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (95% CI)</td>
<td>2011</td>
<td>2008</td>
<td>100.0</td>
<td>0.38 [ 0.21, 0.54 ]</td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity</td>
<td>chi-square=70.99 df=12 p=&lt;0.0001</td>
<td>I² =83.1%</td>
<td></td>
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<td></td>
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<tr>
<td>Test for overall effect</td>
<td>z=4.45 p&lt;0.00001</td>
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</tr>
</tbody>
</table>
### Analysis 07.03. Comparison 07 Type of control, Outcome 03 Physical health

**Review:** Case management for persons with substance use disorders  
**Comparison:** 07 Type of control  
**Outcome:** 03 Physical health

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Treatment as usual</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>71</td>
<td>0.50 (0.33)</td>
<td>80</td>
<td>0.40 (0.33)</td>
<td>17.3</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>71</td>
<td></td>
<td>80</td>
<td></td>
<td>17.3</td>
</tr>
</tbody>
</table>
| Test for heterogeneity: not applicable  
Test for overall effect z=1.84  
p=0.07 |
| 02 | Active control | | | | |
| Naber 2006 a | 177 | 0.04 (1.00) | 184 | 0.00 (1.00) | 42.0 | 0.04 [-0.17, 0.25] |
| Naber 2006 b | 169 | 0.10 (1.00) | 181 | 0.00 (1.00) | 40.7 | 0.10 [-0.11, 0.31] |
| Subtotal (95% CI) | 346 | | 365 | | 82.7 | 0.07 [-0.08, 0.22] |
| Test for heterogeneity chi-square=0.16 df=1  
p=0.69 I² =0.0%  
Test for overall effect z=0.92  
p=0.4 |
| Total (95% CI) | 417 | | 445 | | 100.0 | 0.11 [-0.02, 0.24] |
| Test for heterogeneity chi-square=1.82 df=2  
p=0.40 I² =0.0%  
Test for overall effect z=1.61  
p=0.1 |

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### Analysis 08.01. Comparison 08 Low versus high Methodological Quality Scale, Outcome 01 Drug use

**Review:** Case management for persons with substance use disorders  
**Comparison:** 08 Low versus high Methodological Quality Scale  
**Outcome:** 01 Drug use

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Low (MQS&lt;10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>Not estimable</td>
<td></td>
</tr>
</tbody>
</table>
| Test for heterogeneity: not applicable  
Test for overall effect: not applicable |
| 02 | High (MQS>=10) | | | | |
| Martin 1993 | 56 | -0.02 (1.00) | 63 | 0.00 (1.00) | 11.4 | -0.02 [-0.38, 0.34] |
| Morgenstern 2006 | 135 | 0.58 (1.00) | 156 | 0.00 (1.00) | 17.3 | 0.58 [0.34, 0.81] |
| Rapp 1998 | 249 | 0.24 (1.00) | 228 | 0.00 (1.00) | 20.5 | 0.24 [0.06, 0.42] |
| Rhodes 1997 | 395 | 0.10 (1.00) | 734 | 0.00 (1.00) | 24.0 | 0.10 [-0.02, 0.22] |

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(Continued . . .)
<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>Sorensen 2003</td>
<td>28 0.03 (1.00)</td>
<td>29 0.00 (1.00)</td>
<td>7.0 0.03 [ -0.49, 0.55 ]</td>
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<tr>
<td>Sorensen 2005 a</td>
<td>28 0.11 (1.00)</td>
<td>28 0.00 (1.00)</td>
<td>6.9 0.11 [ -0.42, 0.63 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>71 1.70 (1.30)</td>
<td>80 1.30 (1.70)</td>
<td>13.0 0.26 [ -0.06, 0.58 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>962 1318</td>
<td>100.0 0.21 [ 0.06, 0.37 ]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for heterogeneity chi-square=14.79 df=6 p=0.02 I² =59.4%</td>
<td></td>
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<tr>
<td>Test for overall effect z=2.65 p=0.008</td>
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</table>

**Analysis 08.02. Comparison 08 Low versus high Methodological Quality Scale, Outcome 02 Successful linkage**

Review: Case management for persons with substance use disorders

Comparison: 08 Low versus high Methodological Quality Scale

Outcome: 02 Successful linkage

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>01 Low (MQS&lt;10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Braucht 1995</td>
<td>163 0.11 (1.00)</td>
<td>160 0.00 (1.00)</td>
<td>10.5 0.11 [ -0.11, 0.33 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>163 160</td>
<td>10.5 0.11 [ -0.11, 0.33 ]</td>
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<td></td>
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</tr>
<tr>
<td>Test for heterogeneity: not applicable</td>
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<tr>
<td>Test for overall effect z=0.99 p=0.3</td>
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</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight (%)</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean(SD)</td>
<td>N Mean(SD)</td>
<td>95% CI</td>
<td></td>
<td>95% CI</td>
</tr>
<tr>
<td>02 High (MQS&gt;=10)</td>
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</tr>
<tr>
<td>Coviello 2006</td>
<td>71 0.42 (1.00)</td>
<td>40 0.00 (1.00)</td>
<td>8.3 0.42 [ 0.03, 0.81 ]</td>
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<td></td>
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<tr>
<td>Morgenstern 2006</td>
<td>161 0.46 (1.00)</td>
<td>141 0.00 (1.00)</td>
<td>10.4 0.46 [ 0.23, 0.69 ]</td>
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<td>Morse 2006</td>
<td>54 0.75 (1.00)</td>
<td>49 0.00 (1.00)</td>
<td>8.2 0.74 [ 0.34, 1.14 ]</td>
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<td>Rapp 1998</td>
<td>248 0.89 (1.00)</td>
<td>228 0.00 (1.00)</td>
<td>10.9 0.89 [ 0.70, 1.08 ]</td>
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<tr>
<td>Rapp 2006</td>
<td>190 0.50 (1.00)</td>
<td>206 0.00 (1.00)</td>
<td>10.7 0.50 [ 0.30, 0.70 ]</td>
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<td></td>
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<tr>
<td>Rhodes 1997</td>
<td>199 0.08 (1.00)</td>
<td>369 0.00 (1.00)</td>
<td>11.0 0.08 [ -0.09, 0.25 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scott 2002</td>
<td>344 0.17 (1.00)</td>
<td>348 0.00 (1.00)</td>
<td>11.3 0.17 [ 0.02, 0.32 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 a</td>
<td>30 -0.07 (1.00)</td>
<td>32 0.00 (1.00)</td>
<td>7.0 -0.07 [ -0.57, 0.43 ]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>29 0.37 (1.00)</td>
<td>29 0.00 (1.00)</td>
<td>6.7 0.37 [ -0.15, 0.88 ]</td>
<td></td>
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</tr>
</tbody>
</table>
### Analysis 09.01. Comparison 09 High versus low linkage, Outcome 01 Drug use

Review: Case management for persons with substance use disorders  
Comparison: 09 High versus low linkage  
Outcome: 01 Drug use

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean(SD)</td>
<td>95% CI</td>
<td>(%)</td>
<td>N</td>
</tr>
<tr>
<td>Zanis 1996</td>
<td>27</td>
<td>1.33 (1.00)</td>
<td>4.9</td>
<td>1.30 [ 0.59, 2.01 ]</td>
<td>14</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>1353</td>
<td>1456</td>
<td>89.5</td>
<td>0.45 [ 0.23, 0.67 ]</td>
<td></td>
</tr>
</tbody>
</table>
| Test for heterogeneity chi-square=61.79 df=9 p=<0.0001 I² =85.4%  
Test for overall effect z=4.04 p=0.00005 |
| Total (95% CI)      | 1516     | 1616  | 100.0 | 0.42 [ 0.21, 0.62 ] | 1456 |
| Test for heterogeneity chi-square=67.44 df=10 p=<0.0001 I² =85.2%  
Test for overall effect z=4.01 p=0.00006 |

### Analysis 09.01. Comparison 09 High versus low linkage, Outcome 01 Drug use

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment</th>
<th>Control</th>
<th>Standardised Mean Difference (Random)</th>
<th>Weight</th>
<th>Standardised Mean Difference (Random)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean(SD)</td>
<td>95% CI</td>
<td>(%)</td>
<td>N</td>
</tr>
<tr>
<td>01 Low (d&lt;0.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhodes 1997</td>
<td>395</td>
<td>0.10 (1.00)</td>
<td>26.1</td>
<td>0.10 [-0.02, 0.22 ]</td>
<td>734</td>
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<tr>
<td>Sorensen 2005 a</td>
<td>28</td>
<td>0.11 (1.00)</td>
<td>7.4</td>
<td>0.11 [-0.42, 0.63 ]</td>
<td>28</td>
</tr>
<tr>
<td>Sorensen 2005 b</td>
<td>71</td>
<td>1.70 (1.30)</td>
<td>14.1</td>
<td>0.26 [-0.06, 0.58 ]</td>
<td>80</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>494</td>
<td>842</td>
<td>47.6</td>
<td>0.12 [ 0.01, 0.23 ]</td>
<td></td>
</tr>
</tbody>
</table>
| Test for heterogeneity chi-square=0.85 df=2 p=0.66 I² =0.0%  
Test for overall effect z=2.10 p=0.04 |
| 02 High (d>=0.4)    |           |         |        |      |           |         |        |      |
| Covilleo 2006       | 71       | 0.10 (1.00) | 11.3  | 0.10 [-0.29, 0.49 ] | 40    | 0.00 (1.00) |
| Morgenstern 2006    | 135      | 0.58 (1.00) | 18.8  | 0.58 [ 0.34, 0.81 ] | 156   | 0.00 (1.00) |
| Rapp 1998           | 249      | 0.24 (1.00) | 22.3  | 0.24 [ 0.06, 0.42 ] | 228   | 0.00 (1.00) |
| Subtotal (95% CI)   | 455      | 424 | 52.4  | 0.33 [ 0.06, 0.59 ] |
| Test for heterogeneity chi-square=6.61 df=2 p=0.04 I² =69.7%  
Test for overall effect z=2.39 p=0.02 |
| Total (95% CI)      | 949      | 1266  | 100.0 | 0.24 [ 0.08, 0.41 ] | 1456 |
| Test for heterogeneity chi-square=13.19 df=5 p=0.02 I² =62.1%  
Test for overall effect z=2.91 p=0.004 |

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